
00036579
835

Digitized with financial assistance from

on 15 October, 2018



DON GONZALO FERNANDEZ DE CORDOVA.

HISTORY OF THE REIGN

OF

FERDINAND AND ISABELLA,

THE CATHOLIC,

OF SPAIN.

BY WILLIAM H. PRESCOTT.

36579

Quæ surgere regna
Conjugio tali!
Virgil. Æneid. iv. 47.

Crevêre vires, famaque et imperî
Porrecta majestas ab Euro
Solis ad Occiduum cubîle.
Horat. Carm. iv. 15.

A 1904

IN THREE VOLUMES.

VOL. III.

VV-h-6

LONDON:
RICHARD BENTLEY, NEW BURLINGTON STREET.
Publisher in Ordinary to Her Majesty.
1838.

ʻ +/8ʻ

ʻ#6#1.6

"9 - : 5 5

!

:

$"
/ + - $# $"$# +0 24
#" / : # G # "$ / ? 6 $? 2@
#0 $ #+ * $0 $ 2B
? / 0$&D ? /#$ $' 23
? # > ?$/# $= 25
$" +0 25
-" * ? ' #" F2
& - # * +0 F2
:# /#&$ # * ? ' #" FF
+ +# # ' $ / F(
8 / + - $ # ? 8 ' + FB
? / + # $ (- / &> F5
6# ? $ / $: >$" 4E
+$ D$0 $ * ?# +# 42

6 H

6

$ * '# # * ? # 44
#0 $ 8 $ 111 4(
#& * #'$: >$" 4B
? # && 4)
/#$ -$ + 43
$ $ / $ $&# 111 45
+ - $ $-$ & # 111 45
-# # * ? #$ "# $ # (2
? ; (9 $ * ' # " ? $ #' (4
?$- -# > / * $ / I ((
+ + /#$ *# * + ? # & ' # (B
#"# * ? : $ # $ (5
$, & * ? # & ' # @2
? # 8 " $-?#&$ J @4
6# #$ * ? G 7 / @@
$ > $ / 6 $ @B
K 111 @)

:

6 ' H

' 7 A ' ' A : ' : L

'

$"

' H (' #" ' ' $ >' @5

#& ' *' ?$ ' >' M @5

? ' &?' & , ' # $ BE'

$ +' *' ? ' -$ # ?' B2'

+ $ & ' ' ? ' - BF'

/ ' *' 8$ & $ ' / ' $' : "$ B4

" #$ # ' G# ?' : #& ' $ /' ? ' + - B4

' - >' + $ & ' $- B('

:# G ' *' /# $ /

' *# /' ' + / ' 8 $ ' ' / ' / '$ B)

$ # # ' *' $- B3'

8 /' *' /# $ /(' $# + B5'

8 $ ' ' $# ' $"$# ' ? ' D)4

+# '" *' ' 8 ")4

6 + ' -$#/' ' 8 $ ')(

? ' - ' & *# + ' ? ' $ # # ')@

?+ ' *' $ >')B'

&& ' $ /' # ' *' ? ' &?')3'

$ ' *' / #&')3'

8 $ ' ' # '$/ ' $ $0 #$ 3E'

' ' $ ' ' 32'

& ' # ' ? ' + >' 34

#*#& & ' *' 8 $ ' ' 34

6 ' - # ? ' $' # >' 3(

/ ' $ ' *' $&D' 3@'

$ ' / ' 3)'

#! >' *' 8 $ ' 3)

' F

:

6 ' H

' 7 == ' 7 6' ====8 :

8 ' '

$"

$' # ' *' ? ' &?' $ /' -$ #$ / 5E

$ ' *' - ' ' '# 52

? ' &?' 0 "# ' 6 # # # 54

? ' $ #$ ' *$' ' ? + 5(

? ' &?' + >' ' N 5B

* # # >' *' ? ' -$ #$ / ' 5)'

8 $: ' # ' ' $ $' 55

" ' *' $ $ □

?#'$ ' &?$ $& ' *' ? ' 7 $ ' 2EF

$+ ' $ ' $ # 2EF

' 0 G ' $>$ /' $ /' +$> ' 2E(

' *' ? ' -$ #$ / ' 2EB

-# # ' *' 8 $ ' ' 2E)

? ' &?' / & ' $ $0 #$' 2E3

$ &>' *' ? ' -$ #$ / ' 2E5

+ + ' / *# ' ? ' -$ #$ / ' 22E'

' *' ? ' &?' $ =" $ /' 22E'

#'$' *' - - # □□□

#" ' ' ' ' 224

8 $ ' ' + ' $ /' $D ' # ' 22(

6# ' $ + ' *' ? ' # ' 22@'

-$ ' ' $' ' $ $' ' 0 22)

6 ' H

' 7 == M 7 6' == : '

8 A ' '

?' *' ?$ ' : ' ' ' ' ' ' 223

?# #-' $*#/' P $ $' '# ' -$# ' ' ' ' 225

& " # /' 0>' ' ' ' ' ' 2F2

?# #-0 ' # & ' ' ' ' ' 2F4

H

$"
$' ' -$# ' * ' $ & ' 2F(
" #$ ' $' $ >' G# ?' # ' H 2F@
$ >' *' > ' ' 2FB'
? ' 8 $ ' $- $# ' * ' ' & + - >' G# ?' # 2F3
$ &? ' ' *' $ $' 2F5
' *' ? ' - 24E
&$ + - ' 0 * ' #" $ 242
+ ' - ' 24F
? ' -$ # ?' & ' 244
? ' &?' & ' 244
$ ' *' #" $' 24(
$?' *' + 24@
' *' ? ' &?' 24B
? # ' ' 24)
#' *' ? ' +>' 243
(0#" >' / * $ /' 245
0 +# # ' *' $- ' 2(E
+ - ?$ ' >' *' 8 $ ' ' 2(2
' *' $- ' 2(F
$ ' ' ' + /' 2(4
$ >' $ ' ? ' Q# " / +' / & / 2((

6 ' H

8 ' 7 6' = ' : '

A '

$ >' *' > ' 2(B
! & /' 0>' /# $ / ' 2( )
6# ' #&>' J$ +# / ' 2(3
P $ $' ' - / &> ' 2@F
' > + - + ' *' ? ' $ # > ' 2@4
? ' ; ' ?$ ' ' ? ' 2@(
$0 $' ' # ' 2@@
6 ' ' $ /' # / ' 2@B
? ' &?' # '$/ ' -$# ' 2@)
" ' *' $ $ ' 2@3

$"
$0 $ J # 2@5
/# $ /(&& 0 2B2
& G# ? $ & 2B4
* J# ? $+-$#" 2B(
+- /#+ 6# #& && $&> 2BB
- & $ #' 7 # 2B)

6 H :

7 Q A A = 6 6
6 8

$ &? > /# # *> $ > 2B5
:# G *> ? $ #$ $ 111 2)4
*> ? + - 2)@
8 $ -$ $ # *> # H 2)B
$?> *> J$ / : 111 2))
& # # "> #" 2)5
P # 23E
8 $ ' - /0 * 8$ $ 232
" ?> *>?#> & 111 234
&& -# $ $ 8 +$ % 111 234
? &?> &$+-> ? 8$ #" #$ 23(
$ $" *> ? #/" 23@
- $ # $ & 23)
? &?> + ? #; $ 235
J# J- & $ # *> $ > 25E
8 $ ' " ? ?#> # # 252
8 $ # *> ? +>0 25F
8 $ ' (# 254
+$ D$0 $ & *># 25(
$ # & *> ? -$ #$ / I1 25(
$ # *> ? &? 25@
? #0 /# $ # 25@
$ KK $D ? ? + +$ / R 25B
6 # +> *> $ / $ /> $>$ / 25)

H

6 =ˢH :

ˢ 7 == ˢ ˢ 6 ˢ 8 8 == ˢ 7 6

==8 : ℃ ˢ ˢ

$"

8 $ ' ˢ & ˢ ? ˢ # # ;

+ ˢ ? ˢ ** #' ˢ ; <

$ ˢ *ˢ $&D

$ # ˢ *ˢ ? ˢ &?ˢ ˢ FE4

? >ˢ $ ˢN ˢ 8$ $ FE(

& # ˢ $ ˢ ? ˢ #/" ˢ *ˢ $ FE@

6 >ˢ & / FEBˢ

#'$ ˢ *ˢ ? ˢ -$ # ?ˢ $ FE)ˢ

? ˢ &?ˢ / FE)

? # ˢ 1 FE5ˢ

8$ $ >ˢ *ˢ ? # ˢ ?#'$ >ˢ F2Eˢ

$-# $ # ˢ *ˢ 8$ $ˢ F2Eˢ

8 $ ' ℃ ˢ >ˢ F22

?$" # ˢ *ˢ # ˢ H F24

** # " ˢ *ˢ ? ˢ &? F2(

? ˢ -$ #$ / ˢ && ->ˢ 8$ $ˢ F2@

0 #&ˢ ? #$ + F2B

J # ˢ *ˢ ? ˢ -$ # ?ˢ - F2)

8 $ ' ℃ ˢ #0 $ # >ˢ ˢ ?# ˢ **#& F23

-- ? # ˢ *ˢ # ˢ H F25

$ >ˢ G# ?ˢ $ & ˢ ˢ

8$ $ >ˢ *ˢ # ˢ /℃ ˢ ˢ

$ ˢ *ˢ ? ˢ &?ˢ $# ˢ ˢ

'# Gˢ *ˢ 8 $ ' ℃ ˢ / & ˢ FF2

6# ˢ * +ˢ *ˢ ? ˢ '#& ˢ

* & ˢ ' ˢ ? ˢ +>ˢ

6# ˢ *#/ & ˢ # ˢ ? # ˢ ?$ $& ˢ

ˢ *ˢ ? ˢ +>ˢ

ˢ *ˢ ? ˢ $+ -$#" ˢ F4

+ # ˢ *ˢ 8 $ ' ˢ / ˢ / '$ˢ F42

&?ˢ ? #& F4

H

6 ' H :

' ' 6' ' A 6 ' 6

$"

& # ' *' ? ' ; (' 6 $? F4@

$/' / & ' *'P $ $ F4)

? ' ; ' #K /' G# ?' $' ' ' F43

$# ' ? ' - F45

$ +' *' ? ' $ # ' ' ' F(E

6 ' $+ F(2

' ? ' && # F(F

/# $ /' $+ /' " F(4

'# # ' * ' ?#+ ' ' ' F(4

6 ' /#&# ' F(@

? ' *$# ' $-#/ > F()

6 ' #" $ # ' $ /' $? ' (F(3

6 ' +$# ' $ - /' ' 8 $ $/$ F(5

$#/' # ' ? ' ?$+0 $ ' IfI F(5

$0 $(' F@E

6 ' $ ' F@2

6 ' $" $ #+# >' ' F@4

6 ' # >' ' F@(

6 ' #" >' ' F@B

+ + ' ' ? ' " F@)

/' $ ' #+ F@3

6 ' " ?' *' # &#- F@5

6 ' $& #&$' FBE

6 ' G $ # /' & # '# > ' FB2

6 ' $" FB4

6 ' #0# # > FB@

$ $ ' G# ?' ; ' #K$0 ?' M FB)

#' $' 6 +$" ' ' ? ' :# F)4

H

6 ' H :

' 8 = 6 ' ' 8 =

7 6' 6 = 8 ' ' 6 ' 8

$"

?# #-' $ /' P $ $' - & $#+ /' F)@

& ' *' ? ' 0 ' F)3

' P $ ' $ ' F)5

?# #-(' # ' F3E'

6# ' $ >' # & M ' F3E'

6 ' $+ - ' G# ?' 8 $ ' ' / ' / '$ F32'

/# $ /(' - J# # ' F3F

- $ ' * ' $' & /' $ #$" ' F3(

#&>' *' # ' H F3@

$ >' G# ?' $ & ' F3B'

' + - #&> F33

& /' *' $ $+$ &$ F5E

?# #-' $ /' P $ $' +0$ D' F52

$&?' $ F5F

?# #-' ! # /' 0>' ? ' 0 F5(

6# ' ?$ $& F5@'

/# $ /' - - $ F5@

'# G' G# ?' ?# #- F5)

' - + ' *' /# $ / F53

?# #-(' # F55

/# $ /' #" ' ? ' " &> 4EE

6# ' - #'$ ' 4E2

6# ' #' 4EF

& /' '# G' 4E4

-$ ' *' /# $ /' 4E('

? # # ' * ' ? ' && ' *' ?# #- 4E (

H :

6 ' H :

A 6 ' ' ' ==M6 ' 6

$"
+0 (' $ ' : >$" 4E@
6 ' $ ' $0 $(' $? 4EB
6# ' 4E)
6 ' '# # ' ? ' 4E3
/# $ /(' ! ' $ + ' *'?#+ 4E5
6 ' / &# '# ' 6 $?'$ /' -# # 422
6# ' $? ' 422
6# ' ' $ /' 6$0# ' 424
6# ' ? #$ + 42(
6# ' * >' ?$ $& ' 42@

6 ' H H

' ' ' ' ' ' ! "#$ %%%%%

' : '

?# #-' $ /' P $ $' 42)
?# #-(' $ 0# $ >' 8 ' +
&D ' J $'$"$ & 425
0 ' * +' ?' , # # # 4FE
/# $ /(' # ' *' 8 $ ' 4F4
6 ' $# ' * ' $- 4F('
8 $ ' (' >$ > 4F(
$?' *' ? #- 4F)
6# ' ?$ $& 4F3'
'# # $' 8 ' + 44E
P $ $(' /# # ' ' 1S1 44F
' &$ # ' *' 444
/# $ /' & #' /' G# ?' ? #$ + 44(
6# ' >' # ' $- 44@'
' ? ' " '# 44)'
8 $' # $ # *$& # 44T

H :

6 ' HH

& ' ' ' ( ) * ' '

'

$"

"' *' ' 4(E

P $ $' ' # $ ' / &' 4(E

? ' &?$ " ' ? ' # # ' 4(4

/ >' $ ' *' $ # ' 4(('

' *' ? ' Q# "/ +' 4(@

/# $ /(' - # #&' ?$'# 4(B

6 ' $' ' $- ' ' 4()'

8 $ ' ' / ' / '$' 4(5'

8 # *' *' ? ' $- # $ ' 4@2

#$ ' '# G' *' /# $ /'$ /' # ' 14@F'

+ - #+ ' ' 8 $ ' ' 4@(

? ' Q# "(' & - # ' # ' $ # 4@B

P $ $' ' # + 4@)'

" $ # >' *' /# $ /(' & /# " 4@5

8 $' + > 4@5

6 ' $0 # ? ' $' 8 $ / 4BE'

6# ' J& #' ' ' # > 4BF

" ' *' ? ' 0 4B(

8 $ ' (' " ' ? "?' ? ' #+ > 4B@

/# $ /' 0 $D ' ?# ' 7 / 4B@

? ' ; (' 4BB

8 $ ' ' ' # ?/ $G ' * +' 4B)

- / ' *' ?# ' # + ' 4B3

6 ' HH

H A ; ' ' A : ' ' ='

8 '

#&>' *' /# $ /(' ' # >' 4)E

? #$ +' *' H# + ' 4)F

6# ' #" ' $"$# ' $

+:$'

$"

6# G$ #D -$ $# 4)(

6# ' $ & 4)@

/ $ + > * #&$ 4)B

/ / ? - 4))

? + +$ / * $'$ 4)3

$ 0 * $ 4)5

? # > + / 43E

? 432

H#+ $ 432

- - # # *?# 8 $ 434

6# # * /# $ / 43(

H#+ -$# 43@

* - 0 #& 6 43@

$'$ * #&$, 43)

" *H#+ $ &$ $ 45E

$" #*#& & 45F

'# # * / &$ # 454

? Q# "' '# # ? #' # > 45@

>" /# # *? #0 45)

#**#& # *? D 455

8 $ / ! & *H#+ (EF

6 HH

7

! & $"$# > #& (E@

$" * $+0 $> (E@

#"# (EB

H # '$/ $ > (E3

*: #& (E5

$ + * /# $ / (2E

' # * $- (2F

6 > $" (24

8$ / #J (2(

$ * $' $ (2@

$? *8$ / #J (2)

$"
6# ' ?$ $& (2)
? ' &? $ (25
: #& ' /# " / (FE
$ ' * '$ $ (F2
* $ $ (FF
? ' -$ #$ / ' '#& # (FF
$ ' U' 6# # ' / ' : # (F4

6 ' HH 6

; ' ' :

' #" ' * '$'$ ' (F(
' * -$# ' (FB
" #$ # ' ' ? $ & ' ' (F)
/# $ / ' / +$ / ' $' $ $" ' (F3
$'$ ' $ # / ' ' $ & ' ' (F5
'$/ / ' $ / ' & , / ' 0> ' '$ (4E
?$ $& ' *' P $ ' /' 0 ' (4F
& ' *' ? ' " # ? (44
& +*# ' *' ? ' &? (4(
$ >' *' ? (4@
/# $ / ' ' ?# ' , ' ' (4)
/ ' G# ? $ # ' ' ' (4)
? ' Q# "' ' / & ' J$+# / (43
#"? ' *' $ $" ' ' ' ((2
+ - / & ' *' $'$ ((F
' $? # ' 7 $ ' (((((4
8 ' 0 ' *' : #& > ' ((((((
? # # ' * ' ? ' 6# >' *' $'$ ' ((@

H :

6 ' HH :

6 ' 8 : ' ' : = ' 6

A 6 ' 6

				$"
$J#+# #$ (' #				(()
8 $ ' ' / /' ' $ >=	111			((5
8 $' ? #$ +				((5
? ' Q# "(' #	111	111	111	(@E
8 $ ' ' " ' # ' # +	111			(@2
? ' Q# "(' / # ' * ' ?# /	111			(@F
& # ' *' ?# ' 6 $?		111		(@4
8 $ ' (' ' $ /' $?				(@(
0 #&' 8 # *	111			(@@
6# ' ?$ $&				(@)
6# ' - #'$ ' :# '				(@5
6# ' 7 $ ' *' $# ?				(BE
6# ' >$ >				(B2
/# $ /(' ' # & $				(BF
6# ' #0# # >' ' ?# ' # $ # ' 1	111			(B4
6# ' $ ' 6	111			(B(
6# ' $?' $ /' $+	111			(B)
6# ' />' $ - /' ' 8 $ $/$				(B3
6# ' ' $ /' ?$ $&		111		()E
6# ' + - $ & ' $ /' & +>				()2
6# ' #" >				()4
&& /' *' 6 >- & # >				()(
6# ' *#/>				()@
6# ' ? G/' #&>				()B
6# ' #0# # >				()3
$ ' G# ?' $0 $				()5
6# ' D# " >' ; $ # # ')				(3F
P /" + ' *' ?# ' + - $ #				(34

6 HH:

6 6

ÑH

$"
- - & # '" ? " &> (3B
?$ - & $#+ /Q# '" (33
&/ *H#+ (35
6# ## $ > /# $ & (35
6# / + #& #&> (5E
6# * #" #&> (5E
+ ? G (54
#+#/$? 0 (5('
0 #& # & (5(
$ > *' > (5B N
?$ $ / # -$+ (5)
6# " $ * (53
? $ /# $ $ (53
6# $? @EE
6# ?$ $& @E2
6# ' $ ## > *' $ @E2
6# / - #& 8 ' + @EF
6# + $ # &#- @E(
6# ## / @E@
6# + $ #& ## @EB
6# & +> *' #+ @E3
6# @E5
$ $ G# ? #&? # @2E
#& *8$# / K / $ 0$!$ @2F

6 HH:

8 : 7 6

#&> *' ? G @2@
- # *' ? 0 @2B

HH

$"
? # ' " $ ' G ' @23
$ + ' *' ? ' ? &?' @F2
$ ' *' $ ' @FF
$ ' *' ? ' + + ' @F4'
? # ' #/ $ # ' @F@'
>$ ' /# $ & ' =' @F)'
0# $ >' $ + ' *' /# $ /' @4E
/ '$ & + ' *' "$ #' ' @4@
"$ ' + -# $ # ' @4B
"$ #K$ # ' *' &# ' @43
"$ ' * # '$/ '$ & /' @45
?$ $& ' *' ? ' $G ' @(E'
' # &#- ' *' "# $ # @(F
&#-$ ' J- ' @( )
$ *$& ' @(3
" #& ' @(5'
& +#&$ ' #&>' @@F'
$ ' + - ' + ' @@(
& $ ' *' + -# ' @@B
8 ' + ' *' $- ' @@)
' ' * +' ? ' /# ' ' N @@5
-# # ' *' / ' ' @BE
" ' *' # & ' >' @BF
J& ' *' ? ' -$ #$ / ' @B4'
$ ' >' # ' ? ' # ' @BB'
#$ ' / +# # $ # ' @B5'
8 $ ' - # >' @)2'
0 #&' +0 # ?+ ' @)4
" + $ # ' *' ' ' @)@
& $ ' *' - $ # ' @)B
$ # #&' # &#- ' @)5
?#'$ ' -# # ' *' ? ' - ' @3E'
-# # ' *' #" >' ' @34'
*#& ' + - ' ' @3@'
? ' # /' *' $ # $ ' 8 > @33

6

ſ ſ

ſ ſ

ſ ſ

<= > < <

6 ſ ſ 7 6 ſ 6 ſ ſ 8 9 ſ ſ 6 ſ

6 ſ 6 : 8 ſ ſ ſ 6 ſ 6 ſ L

ſ ſ ſ ſ 6 ſ ſ : ſ ſ L

; ſ ſ 6 ſ ſ 8 ſ L

ſ 6 ſ 8 ſ ſ ſ ſ ſ L

: ſ

:4ED2&'4&?(4&' A'?' ?5:4&F' $4C2G5(@A' 5' -A5'1' 'E2B
G'&2-'4&?' @515' @21E' @'-A' -A5' +52*-C' 2&F' &4$5 -C' 46'
-A5' ?:5&5?' @A':A' E5-'-A5'1' 5C5?' '&' -A5' 5@' 41 F('
?51$5F' -4' H55D' 2 '$5' -A5' -4&5' 46' 5J:'-5E5&-' @A':A'
-A5'1' *&5JD5:-5F' ?*::5??5?' A2F' H'&F 5F' '&' -A5' &2B
-'4& 9' A5' $21'4*?' ?D5:'E5&?' ?5&-' A4E5' '&' -A5' 15B
-*1&' ?A'D?(46'-A5' D14F*:-?' 46'-A5?5' *&H&4@&' 15G'4&?(
:4&6'1E5F' -A5' 2G1552+ 5' +5 '56'-A2-' -A5C' 641E5F' D21-'
46'-A5 G152-' ?'2-':' :4&-'&5&-(@A':A' A2F' ?4' 4&G' 5JB
:'-5F' -A5' :*D'F'-C' 46' *14D52&?' A5' D2&'?A':4*1-('
?A21'&G' '&' -A5' G5&512' 5&-A*?'2?E(5&F52$4*15F' -4'
D14E4-5'-A5' ?D'1'-'46'F'?:4$51C' 2&F':4 4&'L2-'4&' +C' 641B
@21F'&G'-A5' 15M*'?'-5'?*DD '5?(2&F':4ED C'&G'D14ED-B
C' @'-A'-A5' E4?-' E'&*-5' ?*GG5?-'4&?' 46' 4 *E+*?'N
+*-''&' 5??'-A2&'-@4' C521?' 614E'-A5':4EE5&:5E5&-'
46'A'?' ?5:4&F' $4C2G5(-A5' 62:5' 46'-A'&G?' 5JD51'5&:5F'
2' E5 2&:A4 C' :A2&G5' ::4*&-?' @515' 15:5'$5F' 2-'
A4E5' 46'-A5' E4?-' 2 21E'&G' F'?:4&-5&-' 2&F' F'?26B
65:-'4&' '&' -A5' :4 4&C(@A' 5' -A5' 2:-*2' 15-*1&?' 614E'
-A5?5' $2*&-5F' 15G'4&?' @515' ?4' ?:2&-C' 2?' -4' +521' &4'
D14D41-'4&' -4' -A5' 5JD5&?5?' 46'-A5' 5JD5F'-'4&

I▯ '$+ "' ? '$' *' - , ' '/$/ $+ '$' '
' ?$ &$' G?' $&& +-$ # /' &$+# ' , ' ' $'# ' ' '$'
+0 ' '?#' & /' ' >$" ' - /$ ' '$' $ $'&$ #/$/' / '
'#'$// /' ' ?'$? ## ' ' , ' ' - / ' +$ $'# $'
*' '# ' * ' #&# '" ?' & $, # $' , ' ' -# V'
'#/ & ' *" /'#' 6# -$ # $' ' $? ' -$ ' *' ?' '
?' $> '!' #, '/'&# ' ' ▮ ?' & '#' , $ >' $ " # '
> ' ' ## ' / /' # ' "$ /' ' ?'* #* ' *'
$" $' ' - / ' ' - ' ' ? ' #'$ /'&#+$ ' $'/'
+$'- - ''+$' #& ' #' ' ?$ &$'$-' $'$#J ' '
&#- '/'+ /'- , '$'& $ &&# ' /' :#$" ' +'#' --'
?$ $' $" $' ' ?$' '# ' # 253 A FF(
#/ '/' # " ' ' '+ /

A'?' *&641-*&2-5' 15?* -' @2?' '&' 2' G152-' E52?*15' 'ED*-2+ 5' -4' -A5' E'?:4&F*:-' 46' -A5' :4 4&'?-?' -A5EB ?5 $5?' 4?-' 46' -A5E' @515' 2F$5&-*151?' @A4' A2F' 5E+21H5F' @'-A' &4' 4-A51' 5JD5:-2-'4&' -A2&' -A2-' 46' G5--'&G' -4G5-A51' 2' 641-*&5' 2?' ?D55F' C' 2?' D4??'+ 5' '&' -A5' G4 F5&' &F'5?' A5C' @515' @'-A4*-' ?*+41F'&2B -'4&(' D2-'5&:5(' '&F*?-1C(' 41' 2&C' 46' -A5' 15G* 21' A2+'-?' F5E2&F5F' 641' ?*::5??' '&' ?*:A' 2&' 5&-51D1'?5' ?' ?44&' 2?' -A5C' A2F' 2*&:A5F' 614E' -A5'1' &2-'$5' ?A415(' -A5C' ?55E5F' -4' 655' -A5E?5 $5?' 15 52?5F' 614E' -A5' :4&B ?-12'&-?' 46'2 ' 2@' A5C' A21+4*15F',52 4*?C' 2&F' F'?B -1*?-' 46' -A5' 2FE'12' 2?' 2'6415'G&51' A5' :2$2 '51?' 2&F' A'F2 G4?(' 46' @A4E' -A515' @515' -44' E2&C' '&' -A5' 5JD5B F'-'4&(' :4&-5E&5F' A'E' 2?' 2&' *D?-21-(' @A4E' '-' @2?' F5B 14G2-41C' -4' 4+5C' 14E' -A5' 6'1?-' E4E5&-' 46' -A5'1' 2&F'&G' '&' '?D2&'4 2(' -A5C' '&F* G5F' -A5' E4?-' @2&B -4&' ':5&?5' '&' 15G21F' -4' -A5' *&46'5&F'&G' &2-'$5?(' @A4' '&' -A5' ?'ED ':'-C' 46' -A5'1' A521-?' A2F' 15:5'$5F' -A5' @A'-5' E5&' 2?' E5??5&G51?' 614E' A52$5&' A5'1' 4*-B 12G5?(' A4@5$51(' ?44&' D14$4H5F' 2' G5&512' 15?'?-2&:5(' @A':A' 5F' -4' ?*:A' 2' @21' 46' 5J-51E'&2-'4&(' -A2-(' '&' 5??' -A2&' 64*1' C521?0' 26-51' -A5' D2&'21F?' A2F' ?5-' 644-' 4&' -A5' '? 2&F(' 4&5' -A'1F' 46' '-?' D4D* 2-'4&(' 2E4*&-'&G' D14+2+ C' -4' ?5$512' A*&F15F' -A4*?2&F?(' @2?' ?2:1'B 6':5F' P * :A' @515' -A5' E5 2&:A4 C' 2*?D':5?' *&F51' @A':A' -A5' '&-51:4*1?5' @2?' 4D5&5F' +5-@55&' -A5' :'$'B 'L5F' @A'-5' E2&' 2&F' -A5' ?'ED 5' &2-'$5?' 46' -A5' @5?-B 51&' @41 F 9

1' $ /' -' 6# ' / ' &#$ 6# #+# #' / $ /' +# $ ' &$-' J' J##'$-' $ =' &&#/ $' +' #' A' K

A5?5 5J:5??5?(2&F -A5 -4-2 &5G 5:-4 6 2G1':* B -*15(> 641 &4&5 @4* F :4&F5?:5&F -4 -*1& *D -A5 521-A 641 2&C 4-A51 4+,5:-Q-A2& -A5 G4 F -A5C :4* F 6'&F '& '-(> 2- 5&G-A 4::2?'4&5F 2& 2 21E'&G ?:21:'-C 46 D14$'?'4&?N @A' 5 -A5 D441 &F'2&? &5G 5:-5F -A5'1 *?*2 A*?+2&F1C(+5'&G @' '&G -4 ?-21$5 -A5E?5 $5?(?4 -A2- -A5C :4* F ?-21$5 4*- -A5'1 4DD15??41? 9 & 41F51 -4 2$4'F -A5 62E'&5 @A':A &4@ E5&2:5F A'? '-- 5 :4 4&C(4 *E+*? @2? 4+ 'G5F -4 15?41- -4 :4B 51:'$5 E52?*15?(?A41-5&'&G -A5 2 4@2&:5 46 644F(2&F :4ED5 '&G 2 -4 @41H(@'-A4*- F'?-'&:-'4& 46 12&H A5?5 *&D2 2-2+ 5 15G* 2-'4&? ?44& +15F G5B &512 F'?:4&-5&- A5 A'GA.E5-- 5F A'F2 G4?(5?D5B :'2 C(:4ED 2'&5F 4*F C 46 -A5 '&F'G&'-C 46 ?*:A E5:A2&':2 F1*FG51C(@A' 5 2-A51 4' 2&F A'? +15-A15& @515 5M*2 C 4*-12G5F +C -A5 F'E'&*-'4& 46 -A5'1 15G* 21 12-'4&? 6

A5 D2&'?A ?4$515'G&? @5'05 &4@ F2' C 2??2' 5F @'-A :4ED 2'&-? 46 -A5 E2 .2FE'&'?-12-'4& 46 4 *EB +*?(2&F 46 A'? 'ED4 '-': 2&F *&,*?- ?5$51'-'5? -4 +4-A D2&'21F? 2&F &2-'$5? A5C 5&-(A4@5$51(2& *&B @' '&G 521 -4 -A5?5 $2G*5 2::F?2-'4&?N -A5C 6* C 2DD15:'2-5F -A5 F'66':* -'5? 46 A'? ?'-*2-'4&N 2&F 2 .

6# / ' / #0'' **#& ? '*$+## '%R ; ' &'HH:A 6 $'6# #$8 L / $ $ $ $ $/ / $ / &#/ &'# +'#' -'22 #0'##'&$-'#J A' K #' 'S' $ > 0 '# 0#'6# #0'#'&$-'#J'R & $ #&#' ' 0 &'#' 1 ? /#$?$/ + " / #0'#' A 8 +$ $'6# #$/ / $' * ># ? **#&$&> *' $ 'L /#$ '&$-'JJ'$-' $ &#$'6# $ #*'$ $ $ $ $'" $' >'$L #$/ #+## ' +'## A U' -$ #$ /'& + /' 6 $'6# '8 $'/ $ # /' # '$ # " /$>'$'+ &?'$'G / &&#/' &'#' #0'##' &$-'J##

' ' : '

-A4*GA' -A5C' ?5&-' 4*-' 2&' 2G5&-' / *G*?-' <= 7' -4' '&B M*'15' '&-4' -A5' &2-*15' 46' -A5' -14*+ 5?' @A':A' -A152-5&B 5F' -A5' 5J'?-5&:5' 46' -A5' :4 4&C(' -A5C' @515' :2156*' -4' ?5 5:-' 2&' '&F'$'F*2' @A4(' -A5C' -A4*GA-(' C$4* F' +5' E4?-' G12-56*' -4' -A5' 2F E'12 N' 2&F' @A5&' -A5' 2--51' '&' -A5' 64 4@'&G' C521(')* C' <;-A(' <= (' 15-*1&5F' -4' D2'&(' -A5C' 15:5'$5F' A'E' @'-A' -A5' E4?-' 2ED 5' 2:B H&4@ 5FGE5&-?' 46' 15G21F' R' 4E5' -4' *?(K' -A5C' ?2'F' '&' 2' H'&F' 5--51' 46':4&G12-* 2-'4&(' 2FF15??5F' -4' A'E' ?44&' 26-51' A'?' 211'$2 (' R' @A5&' C4*':2&' F4' '-' @'-A4*-' '&:4&$5&'5&:5' -4' C4*1?5 6(' 641' C4*' A2$5' 5&F*15F' -44' E2&C' $5J2-'4&?' 2 152FC K' 9

A5' 2FE'12' +14*GA-' @'-A' A'E(' 2?' +5641 5(' ?*:A' ?2ED 5?' 46' -A5' D14F*:-'4&?' 46' -A5' @5?-51&' A5E'B ?DA515' 2?' @4* F'?-1'H5' -A5' D*+ ':' 5C5(' 2&F'H55D' 2 '$5' -A5' 655 '&G' 46' :*1'4?'-C' &' A'?' ,4*1&5C' -A14*GA' &F2 *?'2' A5' D2??5F' ?4E5' F2C?' *&F51' -A5' A4?D'-2+ 5' 1446' 46' -A5' G44F' :*12-5' 51&2 F5L(' @A4' F@5 ?' @'-A' E*:A' ?2-'?62:-'4&' 4&' -A5' 15E21H2+ 5' 2DD5212&:5' 46' -A5' &F'2&' :A'56?' 64 4@'&G' '&' -A5' 2FE'12 0?' -12'&(' G41G54*?C' F5:412-5F' @'-A' G4 F5&' :4 21?' 2&F' :414B &5-?(' 2&F'$21'4*?' +21+21':' 41&2E5&-?' E4&G' -A5?5' A5' D21-':* 21 C' &4-':5?' :51-2'&' R' +5 -?' 2&F' E2?H?' 46' :4--4&' 2&F' 46' @44F(' @'-A' 6'G*15?' 46' -A5' F5$' ' 5E+14'B F515F' 2&F' :21$5F' -A5154&(' ?4E5-'E5?' '&' A'?' 4@&' D14D51' 'H5&5??(' 2&F' 2-' 4-A51?' '&' ' ' ' ' ' '

" ' A515' '?' E*:A' 152?4&(K' A5' '&651?(' R' -4' +5 '5$5

I' $'$ ' &' /' :#$"' $ '&$-' J#' A K' 6# ' C' & 0 ' / ' ' -$ ' / ' ' ' / I' #0' ' ' & ' +'##' &' #- ' '2E2 A' JJJ#
' ' 6# ' / ' +#=

S

-A2-' A5' 2DD521?' -4' -A5' '? 2&F51?' '&' -A'?' G*'?5(' 2&F' ,-A2-' -A5C' 215' 2 ' 'F4 2-51?(' A2$'&G' 2-2&' 641' -A5'1' 41F' PK 9

*-' &5'-A51' -A5' 2--12:-'4&?' 46' -A5' ?D5:-2: 5(' &41' -A5' G 4@'&G' 15D15?5&-2-'4&?' 46' 4 * E+*?(' @A4' 62&B :'5F' A5' A2F' F'?:4$515F' '&' -A5' E'&5?' 46' '?D2&'4 2' -A5' G4 F5&' M*211'5?' 46' DA'1(' 614E' @A':A' T'&G' 4 4B E4&' A2F' 5&1':A5F' -A5' -5ED 5' 46')51*?2 5E(' :4* F' 15H'&F 5' -A5' F41E 2&-' 5&-A*?'2?E' 46' -A5' &2-'4&' A5' &4$5 -C' 46' -A5' -A'&G' A2F' D2??5F' A5C' A521F' 2' F'6B 6515&-' -2 5(' E4154$51(' 614E' -A5' 4-A51' $4C2G51?(' @A4?5' @2&' 2&F' ?2 4@' $'?2G5?' D14$4H5F' -A5' +'--51',5?-(' -A2-' -A5C' A2F' 15-*1&5F' @'-A' E415' G4 F' '&' -A5'1' 62:5?' -A2&' '&' -A5'1' D4:H5-?' &' ?A41-(' -A5' ?:5D-':'?E' 46' -A5' D*+ ':' ?55E5F' &4@' M*'-5' '&' D14D41-'4&' -4' '-?' 641E51' 4$51@55&'&G' :4&'F5&55=Ú 2&F' -A5' 15-*1&?' @515' ?4' E52G15(' ?2C?' 51&2 F5L(' R'-A2-' '-' @2?' $5'C' G5&512 C' +5 '5$5F' -A515' @2?' '-- 5' 41' &4' G4 F' '&' -A5 '? 2&F K P

?2+5 2' @2?' 621' 614E' D21-':'D2-'&G' '&' -A'?' *&152B ?4&2+ 5' F'?-1*?-' A5' A2F' 5?D4*?5F' -A5' -A541C' 46' 4 * E+*?(' @A5&' 4-A51?' 44H5F' :4 F C' 41' :4&-5ED-*B 4*? C' 4&' '- ,N A5' 6'1E C' 15 '5F' 4&' A'?' 15D52-5F' 2?.

I' $' /' ' $ $&# ' ' A' K' 6# ' /' ' &$-' &JJJ# A 6 $' J- ' /' #0' '#' &'# ?' $+' &?$ # $0 ' -# # ' # +0 ' #' $' ' U' >& $ $+ ' '& &#', ' # &'P ? C' '/$ /' ' ' / + #' $'$'$- / $/' / ' +$D ' ?' * G# "' $+- ' $&L $, $' " '>' $' $#$'&# "$'>' D G /" + ' *' ?', C' "$##$/$' ?$0$ / '>' + =' $ >'- &# ' *' ?#+' U' ' $ / ' ' /#' $' *#" $ R' / ' ? 0'# & / #/$/' >' $' $' 6# ' 8 $' #0'###'&$-'#' # $' +# $' /#' ' #=' $ / K' 6# ' /' ' ' ' -# # ' / '# #" &#$' >' $ #& ' '&$-'&JJJ# >' * K' " $ / ' >' $' ?#K' /

?*12&:5?(-A2- -A5 -12:H 46 F'?:4$51C @4* F 52F -4
4-A51 2&F E415 'ED41-2&- 15G'4&? A5 641E5F 2
A'GA51 5?-'E2-5(E4154$51(46 -A5 $2 *5 46 -A5 &5@
"2:M*'?'-'4&? -A2& 2&C 64*&F5F 4& -A5 2:-*2 D14:55F?
'& G4 F 2&F ?' $51 H55D'&G 5$51 '& $'5@(2? A51 5-B
-51? 2&F '&?-1*:-'4&? 2+*&F2&- C ?A4@(-A5 G 41'4*?
D*1D4?5 46 '&-14F*:'&G -A5 + 5??'&G?(46 A1'?-'2&
:'$' 'L2-'4& 2E4&G -A5 A52-A5& 9 A5 5&-51-2'&5F
2 F55D ?5&?5 46 -A5 E51'-? 46 4 *E+*?(-4 @A4?5 ?5B
1'4*? 2&F 5 5$2-5F :A212:-51 A51 4@& +415 E*:A 15B
?5E+ 2&:5 2 -A4*GA -A5 5&-A*?'2?E(@A':A F'?-'&B
G*'?A5F 52:A(@2? &2-*12 C -5ED515F '& A51 @'-A
?4E5@A2- E415 46 +5&'G&'-C 2&F F'?:15-'4&

*- 2 -A4*GA @' '&G -4 G'$5 -A5 E4?- 5665:-*2
?*DD41- -4 A'? G152- 5&-51D1'?5(-A5 ?'-*2-'4& 46 -A5
:4*&-1C @2? ?*:A 2? E2F5 F5 2C '& '-? 'EE5F'2-5
D14?5:*-'4& *&2$4'F2+ 5 21G5 5JD5&?5 @2?3&5:5?.
?21' C '&:*115F 641 -A5 2:-*2 E2'&-5&2&:5 46 -A5
:4 4&C 6 -A5 5J:A5M*51 @2? '+512 C F12'&5F(E415B
4$51(+C -A5 -2 '2& @21(2? @5 2? +C -A5 D146*?5
E2G&'6':5&:5 @'-A @A':A -A5 &*D-'2 ? 46 -A5 14C2
62E' C @515 &4@ :5 5+12-'&G - @2?('&F55F('& -A5
E'F?- 46 -A5 :4*1- C 15$5 1'5? 2--5&F'&G -A5 E211'2G5
46 1'&:5)4A&(-A2- -A5 2FE'12 D15?5&-5F A'E?5 6

/ ? / $ & + $ &$ $ > &# / :#$" + ## --BB
+ >$+$/$?#!$ C U K$ 2@(+ $
$- 0$0$ / & $ # >
'*$ $, - / V $= ? ? $$ # $ $ $ >
'$ &&# / :#$" /# 0 / 0> ? & G - L
+ # - FBB #/ # ? & >
1 ? +L $+ / #J +# # +$ $=
0 /$ / $> 2(2(54 = / #0 ' ' &JJJ###
" 2(5($- $'$ &L

+56415 -A5 ?4$515'G&? 2- *1G4?(26-51 A'? ?5:4&F $4C2G5 *:A @2? -A5 4@ :4&F'-'4& 46 -A5 -152?*1C 614E - '5?5 :2*?5?(-A2- ?2+5 2 @2? 4+ 'G5F -4 F5612C -A5 :4?- 46 2& 4*-6'- -4 -A5 :4 4&C(2- -A'? - 'E5(614E 6*&F? 41'G'&2 C F5?-'&5F 641 -A5 E211'2G5 46 A51 F2*GA-51 ?2+5 2 @'-A -A5 T'&G 46 41-*G2 9

A'? *&@5 :4E5 F5 2C(A4@5$51(@2? ?46-5&5F -4 4 *E+*? +C -A5 F'?-'&G*'?A5F E21H? @A':A A5 F2' C 15:5'$5F 46 -A5 14C2 62$4*1' 2&F $21'4*? 41F'&2&:5? @515 D2??5F(:4&6'1E'&G 2&F 5& 21G'&G A'? G152- D4@51? 2&F D1'$' 5G5? '& -A5 E4?- 2ED 5 E2&&51(-4 2 G152-51 5J-5&-('&F55F(-A2& A'? E4F5?-C 41 A'? D1*F5&:5 @4* F 2 4@ A'E -4 2::5D-6 A5 2&B G*2G5 '& @A':A -A5?5 D1'&:5 C G12-*'-'5? @515 :4&B 65115F(15&F515F -A5E F4*+ C G12-56* -4 A'? &4+ 5 A521-(:4&-2'&'&G(2? -A5C F'F(-A5 E4?- 5EDA2-':2:H&4@ 5FGE5&-? 46 A'? R E2&C(G44F(4C2 (F'?B -'&G*'?A5F(2&F :4&-'&*2 ?51$':5?(K 2&F -A*? -5?-'B 6C'&G -A5 *&2+2-5F :4&6'F5&:5 46 A'? ?4$515'G&? '& A'? '&-5G1'-C 2&F D1*F5&:5 U

1 K 6# ' ' =
/ #0 '# & ## A '
6# / +# $ &$- J#' A
6 $ 6# 8 $ / $
/ #0 ### &$- #
X &? * J$+- G$? (
" $ *$ #++ $& *
$ / # 6# -$ # $ G# ? ?
*& ' / D $? $/L
+# $ +#"? - * K
6# / ' / #0 '#
& J'##
? # + $0 # ?L
" ? +$> $K" ' - - $
$# * +0 ($

& $# $ $ # ! & # ?$
U ?# ? # ?$ ' ' $ >
? # #" $?$?$ *
$? $/+# $ (% &
G?$ ' ? # $ / ? L
+$>0 " ? + V
?$ # /#&$ /?# - & #$
$&?# ' + $ / # G$ $
? -/ / G?#&? /?#+0>
?# #+- J- /# - -
$? + +0 $ & * ? +
?# - # > ? #=
"# $ / & + $- $'$
:#$" Y& + ## --FF2A
F4@

E 4&G -A5 'ED5F'E5&-? -4 -A5 'E E5F'2-5 :4EB D 5-'4& 46 -A5 2112&G5E5&-? 641 -A5 2FE'12 0? F5B D21-*15 4& A'? -A'1F $4C2G5 E2C +5 2 ?4 &4-':5F -A5 A4?-' '-C 46 '?A4D 4&?5:2(@A4 2- -A'? D51'4F A2F -A5 :4&-14 ' 46 -A5 &F'2& F5D21-E5&-M 2 E2& 46 2& '11'-2+ 5 2&F(2? '- @4* F ?55E(E4?- *&641G'$'&G -5ED51(@A4(614E ?4E5 :2*?5? 46 F'?G*?- @A':A A5 A2F :4&:5'$5F @'-A 4 *E+*? D15$'4*? -4 A'? ?5:4&F $4C2G5(4?- &4 4DD41-*&'-C 46 2&&4C'&G 2&F -A@21-B '&G A'E(641 @A':A A'? 466':'2 ' ?-2-'4& *&641-*&2-5 C 26641F5F A'E -44 E2&C 62:' '-'5? 9

14E -A5?5 $21'4*?:'1:*E?-2&:5? -A5 2FE'12 0?6 55- @2? &4- 152FC +56415 -A5 +5G'&&'&G 46 <= S ' $5& -A5& 6*1-A51 5E+2112??E5&- 4::*115F '& E2&&'&G '-(2? 65@ @515 64*&F @' '&G -4 5E+21H '& 2 ?51$':5 @A':A A2F 62 5& '&-4 ?*:A G5&512 ' F'?:15F'- ' A'? 5F -4 -A5 1*'&4*? 5JD5F'5&- 46 ?*+?-'-*-'&G :4&$':-?(@A4?5 15G* 21 D*&'?AE5&-? @515 :4EE*-5F '&-4 -12&?D41-2-'4& 641 2 'E'-5F D51'4F -4 -A5 &F'5? ' 4 E52?*15 :4* F D4??'+ C A2$5 +55& F5$'?5F E415 5665:-*2 ' 641 -A5 1*'& 46 -A5 '&62&- ?5-- 5E5&- ' A5 ?55F? 46 :411*D-'4& @A':A A2F +55& ?4 4&G 65?-51'&G '& -A5 F 41 F(?44& ?A4- *D '&-4 2 D 5&-'6* ' A21B $5?- '& -A5 5@(2&F 4 *E+*?(@A4 ?*GG5?-5F -A5 E52?*15(@2? -A5 6'1?- -4 152D -A5 61*'-? 46 '-

- 5&G-A(2 ' +5'&G '& 152F'&5??(-A5 2FE'12 ' 5EB +21H5F 4& +421F A'? '-- 5 ?M*2F14&(:4&?'?-'&G 46 ?'J $5??5 ?(@A4?5 :4ED 5E5&- 46 E5&(&4-@'-A?-2&F'&G

9 *&4L('?-(F5 *5$4 '''G2(&25? F5 5$' 2(2&&4 *&F4('+ $' ?5:' JJ > '?- 2(5B F5 E'12&-5(:2D J'$ > V*.

<;

5$51C 5J51-'4&(@2?' ?-' ' F56':'5&-(2&F -44H A'?' :U5D21-*15 614E -A5 D41- 46 - ' *:21(2C (' <= S ' 5 ?-5515F '& 2 E415 ?4*-A51 C(F'15:-'4& -A2&U4& A'?' D15:5F'&G $4C2G5?(2&F 4& -A5 <?- 46 *G*?- ?*::55F5F '& 152:A'&G -5112 A1E2'M -A*?' 5&B -'- '&G A'E?5 6 -4 -A5 G 41C 46 +5'&G -A5 6'1?- -4 ?5- 644- 4& -A5 G152- ?4*-A51& :4&-'&5&-(-4 @A':A A5 A2F +56415 4D5&5F -A5 @2C 9

- '?' &4- &5:5??21C -4 D*1?*5 -A5 -12:H 46 -A5 ' *?B -1'4*?' $4C2G51(@A4?5 :21551(641E'&G -A5 E4?- +1' B '2&- 5D'?4F5 -49-A5 A'?-41C 46 -A5 D15?5&- 15'G&(A2?' +55& ?4 15:5&- C -12:5F +C 2 A2&F @A':A 65@ @' ' :215 -4 64 4@ - @' ' ?*66':5 +1'56 C -4 &4-':5 A'?' D51?4&2 15 2-'4&?' @'-A -A5 D2&'?A G4$51&E5&-(2&F -A5 D1'&:'D 5?' 4& @A':A -A5 :4 4&'2 2FE'&'?-12-'4& @2?' :4&F*:-5F

&' A'?' 211'$2 2- '?D2&'4 2(4 *E+*?' 64*&F -A5 2662'1?' 46 -A5 :4 4&C '& -A5 E4?- F5D 412+ 5 :4&B 6*?'4& & '&?*115:-'4& A2F +55& 12'?5F +C -A5 21-?' 46 2 65@ 62:-'4*?' '&F'$'F*2 ?' 2G2'&?-' A'?' +14-A51 21-A4 4E5@(-4 @A4E A5 A2F '&-1*?-5F -A5 G4$51&B E5&-' F*1'&G A'?' 2+?5&:5 &' -A'?' F5?D512-5 15+5 '4& 2 -A5 '&-515?-?' 46 -A5 :4E E*&'-C @515 &5G 5:-5F A5 E'&5?(@A':A @515 ,*?- +5G'&&'&G -4 "C'5 F 2 G4 F5& A21$5?-(15E2'&5F *&@14*GA- A5 *&B 641-*&2-5 &2-'$5?' @515 ?*+,5:-5F -4 -A5 E4?- '&.

I ' $ > ' 0 ' -'F(@'A K #' ' '# & $ #&# ' &'#' #0'!# A $= 0#' 6# ' #0'#' &$-'J'J# A' '$ ' :#$" ' >' & 0 ' / ' 6 $' 6# ' 8 $' / ' $' ' -$ ' +'##' &' #- ' /' &&#/ $' &'#' #0'###' '22B' 2FE A & ' :#$" ' &'J'J# A K' ' ' = /' ' $-' $'$ ' +'#' /' #0''#' &'J#J

A*'E2&' 4DD15??'4&'% -A515' @2?' &4' 2@' +*-' -A2-' 46'-A5' ?-14&G5?-' 4 *E+*?(' 4&' A'?' 211'$2 (' '&' $2'&' 5&F52B $4*15F' -4' 15?-415' 41F51'% -A5' $51C' :15@?' A5' +14*GA-' @'-A' A'E(' @A4' A2F' +55&' *&641-*&2-5 C' 15D1'5$5F' 614E' -A5' G'++5-' '&' -A5'1' 4@&' :4*&-1C(' ?51$5F' -4' ?@5 ' -A5' E2??' 46' E*-'&C' A5' 2FE'12' 5JA2*?-5F' 21-(' &5G4-'2-'4&(' 5&-152-C(' 641:5(' 2&F' ?*::55F5F' 2-' 5&G-A' '&' D2-:A'&G' *D' 2' ?D5:'4*?' 15:4&:' '2-'4&' +C' ?*:A' :4&B :5??'4&?' 2?' 5??5&-'2 C' 'ED2'15F' A'?' 4@&' 2*-A41'-C' E4&G' -A5?5' @2?' -A5' G12&-' 46' 21G5' -12:-?' 46' 2&F' -4' -A5' 15+5?(' @'-A' D51E'??'4&' -4' -A5' D14D1'5-41' -4' 5ED 4C' 2&' 2 4--5F' &*E+51' 46' -A5' &2-'$5?' '&' '-?' :* B -'$2-'4&' A'?' @2?' -A5' 41'G'&' 46' -A5' :5 5+12-5F' ?C?B -5E' 46' ' (& @A':A' ?*+?5M*5&- C' 5F' -4' -A5' 64* 5?-' 2+*?5?' -A2-' 5$51' F'?G12:5F' A*E2&'-C 9

521 C' 2' C521' 5 2D?5F' 26-51' -A5' 2FE'12 0?' 15-*1&' -4' '?D2&'4 2(' +5641 5' A5' ?*::55F5F' '&' 2 2C'&G' -A5?5' '&-5?-'&5' 65*F?' &' -A5' E52&' @A' 5(' 1*E4*1?' @515' 5$51C' F2C' 152:A'&G' D2'&' 46' -A5' F'?-12:-'4&?' 46' -A5' :4 4&C(' 2::4ED2&'5F' @'-A' E4?-' '&,*1'4*?' 'ED*-2-'4&?' 4&' -A5' :4&F*:-' 46' 4 *E+*?' 2&F' +'?' +14-A51(' @A4' @515' 4*F C' 2::*?5F' 46' 4DD15??'&G' +4-A' D2&'21F?' 2&F' &F'2&?(' 2&F' 46' ?2:1'6':'&G' -A5' D*+ ':' '&-515?-?(' '&' -A5' E4?-' *&?:1*D* 4*?' E2&&51(' -4' -A5'1' 4@&' A5?5' :4ED 2'&-?' @515' 1*&G' '&' -A5' $51C' 521?' 46' -A5' ?4$515'G&?' +C' &*E+51?' 46' -A5' F'?2665:-5F' :4 4&'?-?(

1 8 +$ $' 6# ' / ' $' =' JJJ## A ' $! ' ' 0' /#$ '&'HH A K #' ' '# & $ #&P4 &'#' #0 ' A 6 $' 0#'6# # ' #0'#'&'J'J# A' 6# ' / ' $' / ' &'#' #0'###' 8$ #0$>' +- /'6# ' / ' =' &$-J'# A K'6# ' / ' = -$ $' +'##' #0'J#J'&$-'##MA' ' ' / ' #0' '#' &'J ZZ 6# ' / ' +# $ '&' JJ##*A' J ##

<=

@A4' A2F' 15-*1&5F' -4' D2'&U' 2&F' @A4' ?*114*&F5F' -A5' H'&G' 2?' A5' 14F5' 4*-' 4&' A41?5+2:H(' : 2E41'&G' 4*F C' 641' -A5' F'?:A21G5' 46' -A5' 211521?(' 46' @A':A' -A5C' ?2'F' -A5' 2FE'12 ' A2F' F5612*F5F' -A5E 9

A515' @515' &4-' @2&-'&G' 5$5&' D51?4&?' 46' A'GA' :4&?'F512-'4&' 2-' -A5' :4*1-' -4' G'$5' :15F5&:5' 2&F' :'1B :* 2-'4&' -4' -A5?5' :2 *E&'5?' A5' 15:5&-' F'?:4$51C' 46' -A5' D521 ' 6'?A51'5?' 46' 21'2(' 2?' @5 ' 2?' 46' E415' D14 '6':' $5'&?' 46' -A5' D15:'4*?' E5-2 ?' '&' '?D2&'4 2(' 2&F' -A5' D14?D5:-' 46' 2&' '&F56'&'-5' 5J-5&-' 46' *&5JB D 415F' :4*&-1C(' 4D5&5F' +C' -A5' 2-5' $4C2G5' 46' 4B *E+*?(' E2F5' -A5' $':514C2 -C' 46' -A5' 5@' 41 F' 2' -5ED-'&G' +2'-' 641' -A5' 2$21':5' 2&F' 2E+'-'4&' 46' -A5' E4?-' D4-5&-' G12&F55 ' A5C' 21-6* C' 5&F52$4*15F(' -A5156415(' -4' *&F51E'&5' -A5' 2FE'12 0?' :15F'-' @'-A' -A5' ?4$515'G&?(' +C' 12'?'&G' '&' -A5'1' E'&F?' ?*?D':'4&?' 46'A'?' '&-5G1'-C(' 64*&F5F' &4-' E515 C' 4&' $2G*5' 15D41-?(' +*-' 4&' 5--51?' 15:5'$5F' 614E' -A5' :4 4&C(' :A21G'&G' A'E' @'-A' F'? 4C2 -C(' @'-A' 2DD14D1'2-'&G' -4' A'?' 4@&' *?5' -A5' 15$5&*5?' 46' -A5' '? 2&F(' 2&F' @'-A' -A5' F5?'G&' 46' 515:-'&G' 2&' '&F5D5&F5&-' G4$51&E5&-' 641' A'E ?5 66

' I' 8$ #0$>' +- /' 6# ' !'$' ?' ' *' ?'$/' '
/' -$ $' +'## #0'J#J'&$-' G?' ?$/' /' +$ >' 0$' '
'## A ' $ > ' ' 0' & $ -$ # ?' ?#/$ " ' ' D' ? #'
#&# ' &'#' #0''##'A'8 +$ $' " $' '#' ?' $ /'J.*'$ #>'$ /'
6# ' /' $' /#$ '&$-'JJ### A' / # ' G?#&?' ?' ?$/' * /'
K #' '# 0'6# '&J# R' 6# ' /' +# $ '&$-'
/# $ /' +0 ' + L JJJ'
' ?$' ?' $ /' ?#' 0 ? ' *' K #' ' ' 0#' 6# '
G?' G ' ? ' -$" ' ' ?' #0'#' &'J##'A' $ # $'* # '"
, ' & /' ' #'I ' # ' - $ /' ' / 0' $' G '$'
?'& =>$ /' *' ?' ?$+0 $' $'$ #& ' ' ?$ - ' ?' ?' *'
G# ? '0 # '" * G /' 0>' *#* >' $ / ' $"$# ' ?' $/+# $'
*' ? '$"$0 / 'G?'# /' U' " ' +#/ # -$ # V' $>'
? +' # ' ?' " ' +$ +0 ' & >+$ ' G# ?

-A5 D1465??'4& 2&F -A5 D12:-':5 46 -A5 E4?- 5&B
'GA-5&5F *14D52&? 46 -A5 6'6-55&-A :5&-*1C N 2&F
?*:A -A5 F5D 412+ 5 E2J'E? @A':A 15G* 2-5F -A5 '&B
-51:4*1?5 46 -A5 D2&'?A 2&F 41-*G*5?5 &2$'G2-41?
@'-A -A5 *&:'$' 'L5F &2-'$5? 46 -A5 @5?-51& @41 F 9
4 *E+*?(2G1552+ C -4 -A5?5 $'5@?(A2F($51C ?44&
26-51 -A5 4::*D2-'4& 46 '?D2&'4 2(15:4E E5&F5F 2
15G* 21 5J:A2&G5 46 ? 2$5? 641 -A5 :4E E4F'-'5? 15B
M*'15F 641 -A5 ?*DD41- 46 -A5 :4 4&CN 15D15?5&-'&G(
E4154$51(-A2- '& -A'? @2C -A5'1 :4&$51?'4& @4* F
+5 E415 ?*15 C 5665:-5F(> 2& 4+,5:-('- E*?- +5 2FB
E'--5F(@A':A A5 ?55E? -4 A2$5 5$51 A2F E4?- 521&B
5?- C 2- A521-

?2+5 2(A4@5$51(5&-51-2'&5F $'5@? 4& -A'? E2-B
-51 621 E415 '+512 -A2& -A4?5 46 A51 2G5 A5 A2F

$* > * ? # 6 +#"? + $ $? - + $ > G# 0 * / /> "?
? * # (* ? $ & * ?# + $# $# ?# * > - L
& * ? -$ # ? ' #" + $? G ' &$ * > #+# L
' () ' * ' $ / ? # G ? #J ?
$ / /# & ' /0> ? + A + G ' ? - ! /#& * $ L
? # # $ $/> J# # " ? + $? ' ? ! $ $
$ / ' & ? $ # > $ $ $/+# ?$? " L
[: $ # > +0 $& / ? # #L $ & - * ?# $ " + ? + $ /
$ # > & ? # ? +* ?# $ G? # ' >*$ # $/L
?# > - - # # 0+# / '$ & * ?# $"
? & &# * ? /# * * 1 -$ # ? &$ # * / + $
? # - & # * ? $? #"? * ?# $ # $ ' + $? ? ? ? $ ' +
' $/ / + ? #$ $+ " ? ?# " + $? # + D# " 0$&& $ / + $? ? $ 0# $ > $ / G?#+L
+ #+ +# " ? # 0 $ / $ #&$ #+# $ # ? " / 0#L
(- " $?# # - $ # * ? -(/ # & &# G?$, # (# - $ # * $? /?#+ G$? $ $ # - # / #J #0 J #"? * +$ G# ? G?$ *$# ? &?$- ### . ? I / & * ? - & #0 / $?/ "# #+$ - L # , # # # & / ?$ / > ?$' "$ #' * ? - - G L * / $ 0 $

+55&' F55D C' '&-515?-5F' +C' -A5' 2: :4*&-?' ?A5' A2F' 15B :5'$5F' 614E' -A5' 2FE'12' A'E?5 6(' 46' -A5' G5&- 5(' *&B 4665&F'&G' :A212:-51' 46' -A5' '? 2&F51?N' 2&F' ?A5' 15$4 -B 5F(2-' -A5' 'F52' 46' :4&?'G&'&G' -A5E' -4' -A5' A41141?' 46' ? 2$51C(' @'-A4*-' 5$5&' 2&' 5664 1-' 641' -A5'1' :4&$51?'4&' A5' A5?'-2-5F(' -A5156415(' -4' ?2&:-'4&' A'?' D14D4?2 N' 2&F' @A5&' 2' &*E+51' 46' &F'2&' :2D-'$5?' @565' 2F$51B -'?5F' -4' +5' ?4 F' '&' -A5' E21H5-?' 46' &F2 *?'2(' ?A5' :4E E2&F5F' -A5' ?2 5' -4' +5' ?*?D5&F5F(' -' ' -A5' 4D'B &'4&' 46'2' :4*&:'' 46' -A54 4G'2&?' 2&F' F4:-41?(' 521&5F' '&' ?*:A' E2--51?(' :4* F' +5' 4+-2'&5F(' 2?' -4' '-?' :4&?:'5&B -'4*?' 2@6* &5??' A5' C'5 F5F' ?-' ' 6*1-A51' -4' -A5' +5&5$4 5&-' 'ED* ?5?' 46' A51' &2-*15(' :2*?'&G' A4 C' E5&' -4' +5' '&?-1*:-5F(' 2?' 621' 2?' D4??'+ 5(' '&' -A5' &F'2&' 2&B G*2G5?(' 2&F' ?5&-' 4*-' 2?' E'??'4&21'5?' 641' -A5' :4&$51B ?'4&' 46' -A5' &2-'$5? 9' 4E5' 46' -A5E(' 2?' 2-A51' 4' ' 2&F' A'?' +15-A15&(' ?55E(' '&F55F(' -4' A2$5' +55&' E415' :4&:51&5F' 641' -A5' @5 6215' 46' -A5'1' 4@&' +4F'5?' 'A2&' 641' -A5' ?4* ?' 46' -A5'1' +5&'GA-5F' 6 4:HN' +*-' 4-A51?(' 'E+*5F' @'-A' 2' +5--51' ?D'1'-(' @14*GA-' '&' -A5' G44F' @41H' @'-A' F'?'&-515?-5F' L52 (' 2&F(' '6' @5' E2C' :15F'-' -A5'1' 2: :4*&-?(' @'-A' ?4E5' 566':2:C 6

I' K' 6# ' / ' ' ' / ' #0' ' ' &' JJJ#' A $=' '$ ' &&# ' / ' :#$" ' +' ##' &' #- ' ' 5F A' 6 $' 6# ' 8 ' / ' $' / ' #0' ###' &$-'#'

*' R' + "' ? ' ?# " ' ?$' ?' ? >' *$? ' &$ # /' V' $>' 0 'U'G$'$' # ' "$' $ /' ' $'0 'G?#&?' " $ >' / #"? /' ?' #+- ' - - '

?$'* +' ' ' G' ? $ /' - ' G ' 0$- #K /' ' >' /$>V' :#/$' / ' H#+ ' / ' # '-' 2FE.

/# $ /' +0 ' +$ D' '/ ?' + ' $#' ' ?$' U' ?' /#$ ' G ' ' 0 /# ' * +' ?#'* $' *' ?'$/+# $' $ /'$' ?' $+' #+' ' / # ' ' 0#" '?#+' ?$' ? >'+) *' 0 &$+' ? # #$ %%V' 6# ' / ' +# $ '&$-' JJJ#'

□ '

<S ! !

&' -A5' ?2 E 5' +5&56': 5&-' ?D'1'-(' -A5' 14C2 ' 5--51?' 2&F' 41F'&2&: 5?' *1G5F' 4$51' 2&F' 4$51' 2G2'&' -A5' D212 E 4*&-' 4+ 'G2-'4&' 46' -A5' 15 'G'4*?' '&?-1*: -'4&' 46' -A5' &2-'$5?(' 2&F' 46' 4+?51$'&G' -A5' *- E 4?-' G5&- 5&5??' 2&F' A* E 2&'-C' '&' 2 ' F52 '&G?' @'-A' -A5 E ' A5&' -A5156415' -A5' M*55&' 521&5F' -A5' 211'$2 ' 46' -@4' $5??5 ?' 614 E ' -A5' &F'5?(' @'-A' -A155' A*&F15F' ? 2$5?' 4&' +421F(' @A': A(' -A5' 2F E '12 ' A2F' G12&-5F' -4' -A5' E *-'&551?(' ?A5' : 4* F' &4-' 15D15??' A51' '&F'G&2-'4&(' +*-' 'E D2-'5&- C' 2?H5F(' I ' C' @A2-' 2*-A41'-C' F45?' 4 * E + *?' $5&-*15' -A*?' -4' F'?D4?5' 46' E C' ?*+,5: -?' 0K' /) *&5' ; (' < 7' A5' '&B ?-2&- C' : 2*?5F' D14: 2E 2-'4&' -4' +5' E 2F5' '&' -A5' ?4*-AB 51&' D14$'&: 5?(' -A2-' 2 '@A4' A2F' &F'2&' ? 2$5?' '&' -A5'1' D4??5??'4&(' G12&-5F' +C' -A5' 2F E '12 (' ?A4* F' 641-A@'-A' D14$'F5' 641' -A5'1' 15-*1&' -4' -A5'1' 4@&' : 4*&-1C' M @A' 5' -A5' 65@' ?-' ' A5 F' +C' -A5' : 14@&' @515' -4' +5' 15?-415F' -4' 6155F4 E' '&' 'H5' E 2&&51 9

6-51' 2' 4&G' 2&F' $'?'+ 5' 15 * : -2&: 5(' -A5' M*55&' 2: B M*'5?: 5F' '&' ?5&F'&G' 4*-' 2' : 4 E E '??'4&51' -4' '&$5?-'B G2-5' -A5' 2662'1?' 46' -A5' : 4 4&C ' A5' D51?4&' 2DD4'&-5F' -4' -A'?' F5 ': 2-5' -1*?-' @2?' 4&' 12&: '?: 4' F5' 4+2.' F' 2(' 2' D441' H&'GA-' 46' 2 2-12$2 ' 5' @2?' '&$5?-5F' @'-A' ?*D15E5' D4@51?' 46' : '$' ' 2&F' : 1' E '&2 ',*1'?F': B -'4& ' 5' @2?' -4' +1'&G' -4' -1'2 ' 2&F' D2??' ?5&-5&: 5' 4&' 2 ' ?*: A' 2?' A2F' : 4&?D'15F' 2G2'&?-' -A5' 2*-A41'-C' 46

' 6 $' 6# ' 8 ' / ' $ ' # ' $ ' ? ' $/ +# $ ' +# & / &' /#$ ' #0' #' ' &$-' '## A $'$ -' # ' ?# ' -$ #& $ ' ?$' ?# "' ' &&# ' / ' : #$" ' >' -' 0 ' ? '& #/ $ # ' *'?# '" $' & 0 # +# ' + '##' &' #- ' - 0 #&' '#& ' $' /' ?# +' * +' ' 24(#+ + /#$ ' /# " $& V' ' ' + ' #' - ' , -

2? 2?2? &5E21H? -A2-' R ?4 G152-' @2? -A5 M*55&'? '&F'G&2B

4 * E + * ? ' 5' @2?' 2 * -A41'L5F' -4' -2H5' D4??5??'4&' 46' -A5' 641-15??5?(' $5??5 ?(' D * + ' :' ?-415?' 2&F' D14D51-C' 46' W 5$51C' F5?:1'D-'4&' N -4' F'?D4?5' 46' 2 ' 466':5?N 2&F' -4' :4 E E 2&F' @A2-5$51'D51?4&?' A5' E 'GA-' F55 E' 5JD5F'5&-' 641' -A5' -12&M*' '-C' 46'-A5' '? 2&F(' @'-A4*-' F'?-'&:-'4&' 46'12&H(' -4' 15-*1&' -4' D2'&(' 2&F' D15?5&-' -A5 E ?5 $5?' +56415' -A5' ?4$515'G&?' * : A(' '&' +1'56(' @2?' -A5' ?* E' 46'-A5' 5J-1241F'&21C' D4@51?' '&-1*?-5F' -4' 4+2F' 2(9 -' '?' 'E D4??'+ 5' &4@' -4' F5-51E'&5' @A2-' E 4-'$5?' :4$FF' A2$5' 5F' -4' -A5' ?5 5:-'4&' 46'?4' '&:4 E D5-5&-' 2&' 2G5&-' 641' 2&' 466':5' 46' ?* : A' A'GA' 15?D4&?'+' '-C' 5' ?55 E?' -4' A2$5' +55&' 2' @52H' 2&F' 2114G2&-' E 2&(' ?@5 B 5F' * D' @'-A' *&E52?*12+ 5' '&?4 5&:5' +C' -A5' +1'56' 2*-A41'-C' -A*?' *&F5?51$5F C' +5?-4@5F' 4&' A'E ' 14 E' -A5' $51C' 6'1?-(' A5' 15G21F5F' 4 * E + * ?' '&' -A5' 'GA-' 46' 2' :4&$':-5F' :1'E'&2 ((' 4&' @A4 E' '-' @2?' A'?' + * ?'&5??' -4' ='J5:*-5' -A5' ?5&-5&:5' 46' -A5' 2@ ' : :41F'&G C(' 4&' A'?' 211'$2 ' 2-' -A5' '? 2&F(' * G * ?-' & < (' 26-51' 2&' 4?-5&-2-'4*?' D212F5' 46' A'?' :15F5&-'2 ?(' A5' :4 E E 2&F5F' -A5' 2F E '12 ' -4' 2DD521' +56415' A'E (' 2&F(' @'-A4*-' 5$5&' 2665:-'&G' -A5' 641 E?' 46' 2' 5G2 ' '&M*'1C(' 2-' 4&:5' :2*?5F' A'E' -4' +5' E 2&2: 5F(' 2&F' -A14@&' '&-4' D1'?4&' 4B * E + * ?' ?* + E '--5F' @'-A4*-' -A5' 52?-' ?A4@' 46' 15?'?-B 2&:5(' F'?D 2C'&G' '&' -A'?' ?2F' 15$51?5' -A2-' E 2G&2&' E '-C' 46' ?4* ' @A':A' @4* F' A2$5' -4*:A5F' -A5' A521-' 46' 2

9 2$2115-5('2G5?' C' 5?:' G$ ' / $> /' # ' P >' 2@EE ' # ' :*+1'E'5&-4?(-4E' '' 4:' 'D' ? ' ? - ' / 0 ' * 0 $# L 2F) A 24E A A5' 41'G'&2' :4EB # '" &?' #/# " ' * +' 6# -$ # $' E'??'4& -4 4+2F' 2' @2? F2-5F' $ ' ? /' 0'#$ ' ? ' & # >' 21:A' F2 ' 2&F' 2C' F2 ' 2(55:' * $' + $ ' ' - ! /#&#$ ' ' -A5' 5J5:*-'4& 46' '-(A4@5$51 ? ' $/ +# $

' ;

□

G5&514*?' 2F$51?21C' 4+2F' 2(' A4@5$51(' F'?:4$515F' &4' ?*:A' ?5&?'+' '-C'ℕ 2&F' 26-51' 12H'&G' -4G5-A51' 2 ' -A5' 64* ' 41' 61'$4 4*?' :2 * E&'5?' @A':A' A2-15F' 41' -A5' A4D5' 46' 62$4*1' :4* F' 5J-41-(' A5' :2*?5F' -A5' @A4 5' 42-AB ?4E5' E2??' 46' 2::*?2-'4&' -4' +5' ?5&-' +2:H' -4' D2'&' @'-A' -A5' 2FE'12 (' @A4E' A5' :4E E2&F5F' -4' +5' H5D-' ?-1':- C' '&' '14&?' F*1'&G' -A5' D2??2G5ℕ R'2612'F(K' ?2C?' 51F'&2&F' 4 * E+*?' +'--51 C(' R' 5?-' A5' E'GA-' +C' 2&C' :A2&:5' ?@'E' +2:H' 2G2'&' -4' -A5' '? 2&F K' 9

A'?' 5J:5??' 46' E2 ':5' ?51$5F(' 2?' *?*2 (' A4@5$51(' -4' F5652-' '-?5 6' 4' 5&41E4*?' 2&' 4*-12G5' ?A4:H5F' -A5' E'&F?' 46'-A4?5' E4?-' D15,*F':5F' 2G2'&?-' 4 * EB +*?' ' ?55E5F' -4' 655' '-' 2?' 2' &2-'4&2' F'?A4&4*1' -A2-' ?*:A' '&F'G&'-'5?' ?A4* F' +5' A52D5F' 4&' -A5' E2&' @A4(' @A2-5$51' E'GA-' +5' A'?' '&F'?:15-'4&?(' A2F' F4&5' ?4' E*:A'641' D2'&' 2&F' -A5' @A4 5' :'$' 'L5F' @41 F'ℕ 2' E2&' @A4(' '&' -A5' A4&5?-' 2&G*2G5' 46'2&' 4 F' @1'-51' R'A2F' A5' '$'5F' '&' -A5' F2C?' 46' 2&:'5&-' 155:5' 41' 4E5(' @4* F' A2$5' A2F' ?-2-*5?' 12'?5F(' 2&F' -5ED 5?' 2&F' F'$'&5' A4&4*1?' F5F':2-5F' -4' A'E(' 2?' -4' 2' F'$'&B '-C'PK'6

4&5' D21-44H' 46' -A5' G5&512' '&F'G&2-'4&' E415

I' ' 6# ' / ' +# $ &$-' JJJ'#=====8$ #0$>' +=
- /' 6# ' / ' -$ $' +' ##'
#0' J#J' &$-' >## A ' $ > '
' 0' & $ #&# ' &'#' #0'
A 8 +$ $' 6# ' / ' $' L
/# ' &$-' JJ### A 6 $' 6# '
/ ' $' /# ' #0'#' '&$-' J A =
#' '# 0#' 6# ' #0 #' &$-'
J##

K #' '' 0' 6# =

' #0' #' &' J##' A' 6 $'
6# ' 8 $' #0' '#' &$-' J'
/# $ /' +0 ' ' '
?$' ?#' *$? ' D -' ?' * '
#' G?#&?' ?' G$' 0 "?' ? + '
?$ "# '" -' #' $' $-$ + ' *'
?# ' ? ' $' $' - - $' + L
+ #$' *' $# $' # " $# / <
$ /' G? '?' /# /' / /' ? +'
'0' 0 # /' #' ? ' $+' " $' '
G# ?' ?#+ *' 6# ' / ' L
+# $ ' &$-' JJJ'#

?-14&G C -A2& 51F'&2&F 2&F ?2+5 2(@A4('& 2FF'B
-'4& -4 -A5'1 D51?4&2 655 '&G? 46 F'?G*?- 2- ?4 G14?? 2&
2:-(152F' C :4ED15A5&F5F -A5 @A4 5 @5'GA- 46 4+ 4B
M*C @A': A '-? D51D5-12-'4& E *?- &5:5??21' C 2--2:A -4
-A5E A5C ?5&- -4 2F'L @'-A4*- 2& '&?-2&-0? F5B
2C(2&F :4E E2&F5F -A5 2F E'12 -4 +5 15 52?5F 614E
A'? 'G&4E'&'4*?# 65--51? A5C @14-5 -4 A'E '& -A5
E4?- +5&'G&2&- -51E?(5JD15??'&G -A5'1 ?'&:515 15G15-
641 -A5 *&@41-AC *?2G5 A5 A2F 5JD51'5&:5F(2&F 15B
M*5?-'&G A'E -4 2DD521 +5 6415 -A5E 2? ?D55F' C 2?
D4??'+ 5(2- 12&2F2(@A515 -A5 :4*1- @2? -A5& ?-2CB
'&G - -A5 ?2E5 -'E5(-A5C 6*1&'?A5F A'E 2 -A4*B
?2&F F*:2-? 641 A'? 5JD5&?5?(2&F 2 A2&F?4E5 15-'&*5
-4 5?:41- A'E 4& A'?,4*1&5C

4 *E+*?(15$'$5F +C -A5?5 2??*12&:5? 46 -A5 H'&F
F'?D4?'-'4&? 46 A'? ?4$515'G&?(D14:55F5F @'-A4*- F5.
2C -4 12&2F2(@A':A A5 152:A5F 4& -A5 < -A 46
5:5E+51 < E E5F'2-5 C 4& A'? 211'$2 A5 4+B
-2'&5F 2& 2*F'5&:5 A5 M*55& :4* F &4- 15D15??
A51 -521? 2- -A5 ?'GA- 46 -A5 E2& @A4?5 ' *?-1'4*?
?51$':5? A2F E5- @'-A ?*:A *&G5&514*? 15M*'-2 (2?
'- @515(2- A51 4@& A2&F? A5 5&F52$4*15F -4
:A551 A'? @4*&F5F ?D'1'- @'-A -A5 E4?- 521&5?- 2??*1B
2&:5? 46 A51 ?CED2-AC 2&F ?4114@ 641 A'? E'?641B
-*&5? 4 *E+*?(614E -A5 6'1?- E4E5&- 46 A'? F'?B
G12:5(A2F 15 '5F 4& -A5 G44F 62'-A 2&F H'&F&5?? 46
?2+5 2N 641(2? 2& 2&:'5&- 2?-' '2& @1'-51 15E21H?(
R ?A5 A2F 5$51 62$4*15F A'E +5C4&F -A5 H'&G A51
A*?+2&F(D14-5:-'&G A'? '&-515?-?(2&F ?A4@'&G A'E
5?D5:'2 H'&F&5?? 2&F G44F.@' K A5& A5 +5A5 F

-A5 5E4-'4& 46 A'? 14C2 E'?-15??(2&F '?-5&5F -4 A51 :4&?4 2-41C 2&G*2G5('- @2? -44 E*:A 641 A'? 4C2 2&F G5&514*? A521-(2&F(-A14@'&G A'E?5 6 4& A'? H&55?(A5 G2$5 $5&- -4 A'? 655 '&G?(2&F ?4++5F 2 4*F A5 ?4$515'G&? 5&F52$4*15F -4 ?44-A5 2&F -12&M*' B 'L5 A'? E'&F(2&F(26-51 -5?-'6C'&G -A5'1 F55D ?5&?5 46 A'? '&,*1'5?(D14E'?5F A'E -A2- 'ED21-'2 ,*?-':5 ?A4* F +5 F4&5 A'? 5&5E'5?(2&F -A2- A5 ?A4* F +5 15B '&?-2-5F '& A'? 5E4 *E5&-? 2&F A4&4*1? 9

*:A :5&?*15 A2? 2--2:A5F -4 -A5 D2&'?A G4$51&B E5&- 641 '-? ?A215 '& -A'? *&641-*&2-5 -12&?2:-'4&(+4-A '& -A5 2DD4'&-E5&- 46 ?4 *&?*'-2+ 5 2& 2G5&- 2? 4+2F' 2(2&F -A5 F5 5G2-'4& 46 ?*:A +142F 2&F '&B F56'&'-5 D4@51? '-A 15G21F -4 -A5 6'1?-('- '? &4@ -44 2-5(2? A2? 2 152FC +55& 15E21H5F(-4 2?:51B -2'& 4& @A2- G14*&F? ?*:A 2 ?5 5:-'4& :4* F A2$5 +55& E2F5 A515 '? &4 5$'F5&:5 46 A'? +5'&G '&. (F5+-5F 641 A'? D14E4-'4& -4 '&-1'G*5 41 2&C *&F*5 '&6 *5&:5 &F55F(2::41F'&G -4 -A5-5?-'E4&C 46 4&5 46 A'? :4&-5ED4121'5?(A5 @2? 15D*-5F R 2& 5J-15E5B C A4&5?- 2&F 15 'G'4*? E2&(K 2&F -A5 G44F +'?A4D 2? 2??2? 5JD15?? C F5: 215? -A2- I &4 'ED*-2-'4& 46 F'?A4&5?-C 41 2$21':5 A2F 5$51 15?-5F 4& A'? :A212:B -51 K6 -@2? 2& 51141 46 ,*FGE5&-N 2 G12$5 4&5('&F55F(2&F E*?- D2?? 641 2? E*:A 2? '- '? @41-A

I 8$ #0$> + - / 6# # '&$- '###AMJA K # ' / -$##$ + '## #0 J#J &$- 0# 6# #**# #0 # &$- J## '## A $ > 0 & $ #&# &'# #0 '## A '# / 6# 8 / $ 6# / +# $ &$- / # #0 ### &$- '# A $ JJJ'# JJJ'## A 6 $ 6# $ $ #0 ## &$- '# $- / $= 8 / $ /#$ &'# #0 '$# & + '# / - 55

-' '' 15G21F' -4' -A5' ?5:4&F' :A21G5(' 46' F5 5G2-'&G' *&@2112&-2+ 5' D4@51?(' '-' ?A4* F' +5' 15E5E+515F' -A2-' -A5' G1'5$2&:5?' 46' -A5' :4 4&C' @515' 15D15?5&-5F' 2?' 46' 2' E4?-' D15??'&G' &2-*15(' F5E2&F'&G' 2' D14ED-' 2&F' D515ED-41C' 15E5FC' N' -A2-' 2' E415' 'E'-5F'2&F'D21-'2' 2*-A41'-C(' F5D5&F5&-' 641' '-?' 5J51:'?5' 4&' '&?-1*:-'4&?' 614E' -A5' G4$51&E5&-' 2-' A4E5(' E'GA-' +5' 2--5&F5F' @'-A' 1*'&4*?' F5 2C?N' -A2-' -A'?' 2*-A41'-C' E*?-' &5:5?B ?21' C' +5' D212E4*&-' -4' -A2-' 46' 4 *E+*?(' @A4' @2?' 2' D21-C' 'ED ':2-5FN' 2&F' -A2-(' 2 -A4*GA' *& 'E'-5F',*1'?B F':-'4&' @2?' G'$5&' 4$51' 2 ' 4665&:5?' :4E E'--5F' 2G2'&?-' A'E(' C5-' &5'-A51' A5' &41' A'?' 61'5&F?' G ' -4' +5' E4B 5?-5F' '&' 2&C' 4-A51' @2C' -A2&' +C' -5ED4121C' ?*?D5&B ?'4&' 614E' "466':5(' 2&F' 2' 15-*1&' -4' -A5'1' 4@&' :4*&-1C(' @A515' -A5' E51'-?' 46'-A5'1' :2?5' E'GA-' +5' ?*+E'--5F' -4' -A5' ?4$515'G&?' -A5E?5 $5?

("' A'?' $'5@' 46'-A5' E2--51(' '&F55F(' '?' D5165:-C' :4&B 641E2+ 5' -4' -A2-' 46' 51F'&2&F' 4 *E+*?(' @A4?5' ?4 'B :'-*F5(' ?4' 2DD215&-' '&' 5$51C' D2G5(' 641' A'?' 62-A510?' 15B D*-2-'4&(' E*?-' A2$5' 5665:-*2 C' :4*&-51+2 2&:5F' 2&C' 15D*G&2&:5' A5' E2C' A2$5' 65 -' 2-' 'ED*G&'&G' -A5' :4&B F*:-' 46' A'?' ?4$515'G&?' R' A5' 4& C' G14*&F' 46' :4EB D 2'&-(K' A5' 15E21H?(' '&' ?*EE'&G' *D' A'?' &2112-'$5' 46' -A5' -12&?2:-'4&(' R' @A':A' ' :2&' +1'&G' 2G2'&?-' -A5'1' 2-A4 ':' A'GA&5??5?(' '?' -A5' *&6'-&5??' 46' -A5' 2G5&-' @A4E'-A5C'5ED 4C5F(' 5M*2 C' E2 ':'4*?'2&F''G&412&-' 2F' -A5C' ?5&-' 4*-' 2' ?*'-2+ 5' D51?4&(' -A5' 2FE'12' @4* F' A2$5' +55&' A'GA C' G12-'6'5F(' ?'&:5' A5' A2F' E415' -A2&' 4&:5' 15M*5?-5F' -A5' 2DD4'&-E5&-' 46' ?4E5' 4&5' @'-A' 6* ' D4@51?' 46',*1'?F':-'4&' '&' 2&' 2662'1' @A515' A5

/

65 -' ?5 E 5' &2-*12 ' F5 ':2:C' '&' E 4$'&G(' '&' :4&?5M*5&:5'
46'A'?' 4@&' +14-A51' A2$'&G' +55&' 41'G'&2 C' '&$4 $5F' '&'
'- K' &F' 2?' -4' -A5' $2?-' E 2G&'-*F5' 46' -A5' D4@51?'
'&-1*?-5F' -4' 4+2F' 2(' A5' 2FF?(' R' '-' :2&' ?:21:5 C' +5'
@4&F515F' 2-(' :4&?'F51'&G' -A5' E 2&'64 F' :4 E D 2'&-?'
2G2'&?-' -A5' 2F E '12 ' E 2F5' -4' -A5'1' A'GA&5??5? K9

-A4*GA' -A5' H'&G' 2&F' M*55&' F5-51 E '&5F' @'-A4*-'
A5?'-2-'4&' 4&' -A5' :4 E D 5-5' 15?-412-'4&' 46' -A5' 2F E 'B
12 0?' A4&4*1?(' -A5C' -A4*GA-' '-' +5--51' -4' F5651' A'?' 15B
2DD4'&-E 5&-' -4' -A5' G4$51& E 5&-' 46' -A5' :4 4&C' *&-' '
-A5' D15?5&-' F'?-*1+2&:5?' ?A4* F' +5' ?5-- 5F(' 2&F' A5'
E 'GA-' 15-*1&' -A515' @'-A' D51?4&2 ' ?265-C' 2&F' 2F$2&B
-2G5 ' &' -A5' E 52&' -' E 5(' -A5C' 15?4 $5F' -4' ?5&F' 4*-' 2'
:4 E D5-5&-' '&F'$'F*2 (' 2&F' -4' ?*DD41-' A'E9'@'-A' ?*:A'
2' 641:5' 2?' ?A4* F' 4$512@5' 62:-'4&(' 2&F' 5&2+ 5' A'E'
-4' D 2:5' -A5' -12&M*' '-C' 46' -A5' '? 2&F' 4&' 2' D51 E 2&5&-'
+2?'?

A5' D51?4&' ?5 5:-5F' @2?' 4&' ':4 2?' F5' $2&F4(' :4 E 5&F2F41' 46' 215?(' 46' -A5' E ' '-21C' 41F51' 46' :2&B
-212 ' 5' @2?' 2' E 2&' 46' 2:H&4@ 5FG5F' D1*F5&:5' 2&F'
?2G2:'-C(' -5 E D512-5' '&' A'?' A2+'-?(' 2&F' D 2*?'+ 5' 2&F'
D4 '-':' '&' A'?' 2FF15?? ' -' '?' ?*66':'5&-' 5$'F5&:5' 46' A'?'
?-2&F'&G' 2-' -A5' :4*1-(' -A2-' A5' A2F' +55&' 4&5' 46' -A5' -5&'
C4*-A?' ?5 5:-5F' -4' +5' 5F*:2-5F' '&' -A5' D2 2:5' 2?' :4 E B
D2&'4&?' 641' -A5' 1'&:5' 46' ?-*1'2?' 5' @2?' 6*1&'?AB
5F' @'-A' 2' 6 55-' 46' -@4.2&F.-A'1-C' ?2' (' :211C'&G' -@5&B
-C.6'$5' A*&F15F' D51?4&?(' E 2&C' 46' -A5 E ' 46' -A5' +5?-'
62 E ' '5?' '&' -A5' H'&GF4 E (' @'-A' 5$51C' $21'5-C' 46' 21-': 5'
641' -A5' &4*1'?A E 5&-' 2&F' D51 E 2&5&-' D14?D51'-C' 46' -A5

' ' 44&('?-(F5' E'12&-5(:2D' JJJ$'(

6 ; :4 4&C 2&F -A5 G5&512 5M*'DE5&- @2? '& 2' ?-C 5 46 5JD5&?5 2&F E2G&'6':5&:5 ?*:A 2? A2F &5$51 +5B 6415 +55& 2$'?A5F 4& 2&C 21E2F2 F5?-'&5F 641 -A5 @5?-51& @2-51? 9

5D-5E+51 < < A5 &5@ G4$51&41 @2? '&?-1*:-B 5F 'E E5F'2-5 C 4& A'? 211'$2 -4 ?5&F 4+2F' 2 A4E5 641 -1'2 ! &F51 A'? 2J 2FE'&'?-12-'4& 2+*?5? 46 5$51C H'&F A2F E* -'D '5F -4 2& 2 21E'&G 5J-5&- 2&F -A5 D441 &2-'$5?('& D21-':* 21(@515 12D'F C @2?-'&G 2@2C *&F51 -A5 &5@ 2&F E4?-' '&A*E2& 2112&G5E5&- 46 -A5 ' (@A':A A5 5?-2+B '?A5F ?2+5 2 &4@ F5: 215F -A5 &F'2&? 155 2&F 5EDA2-':2 C 5&,4'&5F 4& -A5 2*-A41'-'5? 46 '?D2&'4 2 -4 15?D5:- -A5E 2? -1*5 2&F 62'-A6* $2??2 ? 46 -A5 :14@& $2&F4 @2? 5?D5:'2 C -4 2?:51-2'& -A5 2E4*&- 46 4??5? ?*?-2'&5F +C 4 *E+*? 2&F A'? +14B -A51?(-4 D14$'F5 641 -A5'1 6* '&F5E&'6':2-'4&(2&F -4 ?5:*15 -A5 *&E4 5?-5F 5&,4CE5&-'&6*-*15 46 2 -A5'1 2@6* 1'GA-? 2&F D5:*&'21C D51M*'?'-5?6

41-'6'5F @'-A -A5 E4?- 2ED 5 '&?-1*:-'4&? '& 15B G21F -4 -A5?5 2&F 4-A51 F5-2' ? 46 A'? 2FE'&'?-12-'4&(-A5 G4$51&41 5E+21H5F 4& +421F A'? E2G&'6':5&- 6 4B -' 2(2&F :14??5F -A5 +21 46 - * :21(5+1*21C < (< ; 6*1'4*? -5ED5?- F'?D51?5F -A5 6 55- +56415 '- A2F +55& 4*- 2 @55H(2&F 2 15D41- 152:A5F D2'& -A2- '- A2F 5&-'15 C D51'?A5F A5 ?4$515'G&?(4$51.

511512('?- 5&512 F5 2? &F 5:'' '+''$:2D J' > '?-(F5 E'12&-5(:2D JJJ$'' .. 5&L4&'(1+'? '?-'+'' :2D J'' > 5E F5 2 :2F(F5 '?-(<' D(43@

6 $'6# / $ /#$ #0 #' &J#A J### A $'$:#$" > & 0#+# + ## & #- 243 2((A 6# / +#$ &JJJ'##

@A5 E5F' @'-A' ?4114@' 2-' -A'?' 615?A' F'?2?-51(' @A':A' :4&?'G&5F' ?4' E2&C' 46' -A5'1' +5?-' 2&F' +12$5?-' -4' 2' @2-51C' G12$5(' ?A*-' -A5E?5 $5?' *D' '&' -A5'1' D2 2:5' 641' ?5$512 ' F2C?' 41-*&2-5 C(' -A5' 15D41-' D14$5F' ' .' 64*&F5F ' A5' 6 55-' 14F5' 4*-' -A5' ?-41E' '&' ?265-C(' 4&5' $5??5 ' 4& C' A2$'&G' D51'?A5F(' 2&F' -A5' 15E2'&F51' 152:AB 5F' '&' F*5' -'E5' '-?' D 2:5' 46' F5?-'&2-'4& 9

A5' D2&'?A' G4$51&E5&-' A2?' +55&' 14*&F C' -2J5F' @'-A' '&,*?-':5' 2&F' '&G12-'-*F5' 641' '-?' F5 2C' '&' 15?-41B '&G' 4 *E+*?' -4' -A5' 6* ' D4??5??'4&' 46' A'?' :4 4&'2 ' 2*-A41'-C(' 2&F' -A2-' -44' +C' @1'-51?' G5&512 C' F'?-'&B G*'?A5F' 641' :2&F4*1' 2&F' 'ED21-'2 '-C ' 4' ?*:A' 2&'EB 2F$51?'4&(' A4@5$51(' 2?' 621' 2?' ' 2E' 2@215(' '?' :4*&B -5&2&:5F' +C' :4&-5ED4121C' A'?-41'2&?℠ 2&F' '-' 2DD521?' -4' +5' @A4 C' *&F5?51$5F ' &F5D5&F5&-' 46'-A5' 4+$'4*?' '&5JD5F'5&:C' 46' 15-*1&'&G' A'E' 'EE5F'2-5 C' -4' -AU' -A52-15' 46' F'?265:-'4&' +5641 5' -A5' 5E+51?' 46' 2&:'5&-' 2&'E4?'-C' A2F' A2F' -'E5' -4' :44 (' -A515' @515' ?5$512 ' 652-*15?' 46' A'?' :A212:-51' @A':A' E2H5' '-' F4*+-6* ' @A5-A51' A5' @515' -A5' E4?-' :4ED5-5&-' D51?4&(' '& 2&C' 5$5&-(' 641' 2&' 5E51G5&:C' F5E2&F'&G' 2-' 4&:5' -A5' G152-5?-' :44 &5??(' :4&?*EE2-5' 2FF15??(' 2&F' 2:H&4@B 5FG5F' D51?4&2 ' 2*-A41'-C ' '?' ?*+ 'E5' 5&-A*?'2?E(' @A':A' :211'5F' A'E' $':-41'4*?' 4$51' 5$51C' 4+?-2: 5(' '&B $4 $5F' A'E' 2 ?4' '&' &*E514*?' 5E+2112??E5&-?(' @A':A' E5&' 46' E415' DA 5GE2-':' -5ED512E5&-' @4* F' A2$5' 5?:2D5F ' -' 5F' A'E' -4' :4*&-' -44' 152F' C' 4&' 2' ?'E'B 21' ?D'1'-' '&' 4-A51?(' 2&F' -4' +5' F'?2DD4'&-5F ' -' G2$5' 2&' 5J2GG512-5F' :4 4*1'&G' -4' A'?' $'5@?' 2&F' F5?:1'D.

+ ; -'4&?(-A2-' '&5$'-2+ C' 5F' -4' 2' 152:-'4&' '&' -A5' E'&F?' 46' ?*:A' 2?' 5E+21H5F' -A5'1' 2 ' 4&' -A5' ?D 5&F'F' F152E?' 46' 2' 62'1C' 2&F(@A':A' -A5C' @515' &5$51' -4' 152 'L5 9' 5&:5' 2'61*'-6* ' ?4*1:5' 46' F'?:4&-5&-' 2&F' F'?2665:-'4&' '&' A'?' 64 4@51?' -' 5F' A'E('&' A'?' 52G51&5??' 641' -A5' 2:A'5$5E5&-' 46' A'?' G152-' 5&-51B D1'?5?(-4' +5' 5??' ?:1*D* 4*?' 2&F' D4 '-':' 2?' -4' -A5' E52&?' -A2&' 2' 5??' 21F5&-' ?D'1'-' @4* F' A2$5' +55&' '?' D51-'&2:'4*?' 2FA515&:5' -4' -A5' ?:A5E5' 46' &F'2&' ? 2$51C(2&F' A'?' 'ED4 '-':' 15G* 2-'4&' :4ED5 '&G' -A5' 2+4*1' 46' -A5' A'F2 G4?(215' D51-'&5&-' 5J2ED 5?' 46' -A'? X' 5' @2?(E4154$51(2' 6415'G&51(@'-A4*-' 12&H

1' ?'?#"?'/ ' # $'* # "' *' +0 ' /'?#+' ' $&' ' $ # '#' &#- ' ' ?'' $L # ' &# & + $ & ' $ /' & ' *' ?#' $/' # ' #* ' ? ' ?'0 # ' /' ?#' " $' /# & ' >' $ & /' #' ?' - &$>- ' $ /' $#$?.' ?' #/ #*# /' $' ' ?$' '0 * ' $ /' ?' +# ' *' 6# -$ # $'G# ?' ?'" / ', $ L # ' G?#&?' * # ? /' + ' G# ?' ?' +$ #$ '* '?#' +L - '!' ?'*$ &# /' ?$'?'?$/'/ L +# /' ?' $& $' &$#>' *' ?'"$ / ' *' / '#' ?' G>' /# & ' /' "# ' *' $ #$'0 ' ?#' " $ ' J $'$"$ &' G$' ?#' - ! &' *'$' & $/'* ' ?' & ' >' *' ?'? >' - &? ' ?#'?'&? # ? /'* +' ?'*# ' ? ' *'?#'/# & ' >'- # "'#' #' ?' + ' " ' +$ ' ' ?' ' #" ' $ /' +$D# "'$&L $'- '# # '* '#'#'?# ' $L + ' ?#'G$'$'*#"?'?G L ' '0 > /' ?' -# #' ' ' *' ?#' +$ #&$" ' $ /' - 0$0 > & #' /'$' # ' # '$ L # '* +' ?', '$'* +'? ' + ' & ' $ /' &$& $ # "' ? L 0$ /' ' $ > ' ' 0' & $ #&# ' &'#' ?0' '# A =' & ' :#$" ' / ' '$-' $'$ =' ' +'#'-'F@5.' +'##' &' #- ' '2(EA 6 $' #0''#' &$-'H:

' ? ' J$+-' G$' ?' ##> /# # ' - # ?+ ' *'/ # L , ' 0>' /#+# # ?# "' ? #' =' M$ '$ G$ &' *'* /' $' + $L ' ' 0 J# ' $' '&$ '* ' ?'# * &' *'?' ' #" ' G?' - ?#0# /' #' $ " ? ' $'$ ' :#$" 'Y&' +'##' &' #-' 5).' 6 $' G?' + '0'$/+# /' '?$' '0 ' #' ' / " ' # #0 ' ' ?' + # ' *' +0 ' & ' ?#' $&& ' *' ?' '$ # ' $&& $L # ' " /'$"$# '?#+'$ /' ?#' 0 ? 'G# ?' ?' +$ D' ?$' U'G# ?' ' #>' $ G$ &'* '&$L + >' ? >' + '0'& * /

;S

641-*&5(' 41' D4@516* ' 61'5&F?N' 2&F' A'?' A'GA' 2&F' ?*FB
F5&' 5 5$2-'4&' &2-*12 C' 12'?5F' *D' 2' -A4*?2&F' 5&5E'5?'
2E4&G' 2' D14*F(' D*&:-' '4*?(' 2&F' '&-5&?5 C' &2-'4&2 '
D54D 5 ' ! &F51' -A5?5' E * -'D '5F' 5E+2112??E5&-?(' 15B
?* -'&G' 614E' D5:* '21'-'5?' 46' :A212:-51' 2&F' ?'-*2-'4&('
-A5' ?4$515'G&?' E'GA-' @5 ' +5' 5J:*?5F' 641' &4-' '&-1*?-B
'&G' 4 *E+*?(' 2-' -A'?' F5 ':2-5' :1'?'?(' @'-A' F'?5&-2&GB
'&G' -A5' E5?A' 46' '&-1'G*5' 2&F' 62:-'4&' '&' @A':A' -A5'
2662'1?' 46' -A5' :4 4&C' @515' ?4' *&A2DD' C' '&$4 $5F
' -1*?-' -A5?5' 15E21H?' @' ' &4-' +5' :4&?-1*5F' '&-4'
2&' '&?5&?'+' '-C' -4' -A5' E51'-?' 2&F' 5J2 -5F' ?51$':5?' 46'
4 *E+*?' R' '@41 F(K' -4(' +4114@' -A5' @41F?(' -A4*GA'
&4-' -A5' 2DD ':2-'4&' 46' -A5' 155H' A'?-41'2&(' !' '?' A'?'
E4&*E5&-K' '?' $'1-*5?' ?A'&5' @'-A' -44' +1'GA-' 2'
*?-15' -4' +5' F'E E5F' +C' 2' 65@' &2-*12 ' + 5E'?A5?N'
+*-' '-' +5:4E5?' &5:5??21C' -4' &4-':5' -A5?5(' -4' $'&F'B
:2-5' -A5' D2&'?A' G4$51&E5&-' 614E' -A5' 'ED*-2-'4&'
46' D516'FC' 2&F' '&G12-'-*F5(' @A515' '-' A2?' +55&' E4?-'
6155 C' *1G5F(' 2&F' 2DD215&- C' @'-A' -A5' 52?-' 64*&FB
2-'4&

-' '?' E415' F'66':* -' -4' 5J:*?5' -A5' D2 -1C' 5M*'DE5&-'
@'-A' @A':A' -A5' 2FE'12 ' @2?' ?*66515F' -4' *&F51-2H5'
A'?'' 64*1-A(' 2&F' 2?-' $4C2G5 ' A5' 4+,5:-' D14D4?5F'
+C' -A'?' 5JD5F'-'4&' @2?' -A5' F'?:4$51C' 46' 2' D2??2G5'
-4' -A5' G152-' &F'2&' 4:52&(' @A':A' A5' '&65115F> ??G2B
:'4*? C' 5&4*GA' 614E' A'?' D15E'?5?(' -A4*GA(' 2?' '-' -*1&B
5F' 4*-(' -4' -A5' G152-' '&:4&$5&'5&:5' 46' -A5' :4EE51:'2 '
@41 F(' E4?-' 5114&54*?C(> E*?-' 4D &' ?4E5@A515' +5.

&4-' -4 A2$5 G4$51&5F -A5 2?' -A5C 4*GA-' -4 A2$5 F4&5K' '?-(
-' '2&?@'-A' -A5 E4F512-'4& -A2-' 5&512('+' '$' :' 'J

E ?ˢ ˢ ˢ ! ;

-@55&ˢ *+2ˢ 2&Fˢ -A5ˢ :42?-ˢ 46ˢ 21'2ˢ 4*1ˢ :212$5 ?(ˢ 4& C(ˢ @515ˢ 6*1&'?A5Fˢ 641ˢ -A5ˢ 5JD5F'-'4&(ˢ -A5ˢ 21G5?-ˢ 46ˢ @A':Aˢ F'Fˢ &4-ˢ 5J:55Fˢ ?5$5&-Cˢ -4&?ˢ +*1-A5&ˢ ℕˢ 2ˢ 641:5ˢ 641E'&Gˢ 2ˢ ?-1'H'&Gˢ :4&-12?-ˢ -4ˢ -A5ˢ E2G&'6':5&-ˢ 21E2F2ˢ 2-5 Cˢ '&-1*?-5Fˢ -4ˢ $2&F4(ˢ 2&Fˢ 2 -4G5-A51ˢ -44ˢ '&?'G&'6':2&-ˢ -4ˢ A5ˢ $'&F':2-5Fˢ 4&ˢ -A5ˢ G14*&Fˢ 46ˢ -A5ˢ F'66515&-ˢ 4+,5:-?ˢ D14D4?5Fˢ +Cˢ -A5ˢ -@4ˢ 5JD5F'B -'4&? 9

4 *E+*?(ˢ 4DD15??5Fˢ @'-Aˢ G14@'&Gˢ '&6'1E'-'5?ˢ 2&Fˢ 2ˢ :4&?:'4*?&5??(ˢ D51A2D?(ˢ 46ˢ -A5ˢ F5: '&5ˢ 46ˢ D4D* 21ˢ 62$4*1(ˢ E2&'65?-5Fˢ !&*?*2ˢ F5?D4&F5&:Cˢ D15$'4*?ˢ -4ˢ A'?ˢ 5E+21H2-'4&ˢ 5ˢ -2 H5F(ˢ 5$5&(ˢ 46ˢ 15?'G&'&Gˢ -A5ˢ -2?Hˢ 46ˢ6*1-A51ˢ F'?:4$51Cˢ -4ˢ A'?ˢ +14-A51ˢ 21-A4 4E5@ˢ Rˢ ˢ A2$5ˢ 5?-2+ '?A5F(Kˢ ?2'Fˢ A5(ˢ Rˢ 2ˢ -A2-ˢ ˢ D14D4?5F(ˢ >ˢ -A5ˢ 5J'?-5&:5ˢ 46ˢ 2&Fˢ +5C4&Fˢ -A5ˢ 5?-ˢ ˢ A2$5ˢ 4D5&5Fˢ -A5ˢ G2-5(ˢ 2&Fˢ 4-A51?ˢ E2Cˢ 5&-51ˢ '&ˢ 2-ˢ -A5'1ˢ YD 52?*15ℕˢ 2?ˢ '&F55Fˢ -A5Cˢ F4(ˢ 2114G2-'&Gˢ -4ˢ -A5E?5 $5?ˢ -A5ˢ -'- 5ˢ 46ˢF'?:4$5151?(ˢ -4ˢ @A':Aˢ -A5Cˢ :2&ˢ A2$5ˢ '-- 5ˢ : 2'E(ˢ 64 4@'&G2?ˢ -A5Cˢ F4ˢ '&ˢ ECˢ -12:H Kˢ 5ˢ '-- 5ˢ -A4*GA-ˢ -A5ˢ '&G12-'-*F5ˢ 46ˢ E2&H'&Fˢ @4* Fˢ ?2&:-'4&ˢ -A5ˢ : 2'E?ˢ 46ˢ-A5?5ˢ2F$5&-*151?ˢ ?4ˢ621ˢ 2?ˢ -4(:4&651ˢ -A5ˢ &2E5ˢ 46ˢ4&5ˢ46ˢ-A5ˢ 52?-ˢ46ˢ-A5Eˢ 4&ˢ -A5ˢ @A4 5ˢ46ˢ-A2-ˢ @41 Fˢ @A':Aˢ A'?ˢ G5&'*?ˢ A2Fˢ 15$52 5F ,.

Iˢ 8$ #0$>ˢ +- /ˢ 6# ˢ /ˢ -$ $ˢ +ˢ##ˢ #0ˢJ#Jˢ&$-ˢ J#' A 6# ˢ/ ˢ +##=$ ˢ&$-ˢ JJJ'### A 6 $ˢ /#$ˢ &&#=ˢ / $ ˢ #0ˢ'ˢ &$-ˢ#ˢA ˢ =ˢ K #ˢ 'ˢ 0#ˢ6# ˢ&$-ˢJ#' *ˢ ˢG /ˢ0ˢ" # ℳˢ ˢ*ˢ ˢ G$>ˢ ˢ# ' #"$ ˢ ?ˢ - L # ˢ *ˢ + #"ˢ: - &&# ˢ?ˢ ? ˢ *ˢ*# ˢ /# & ' # ℳˢ ?

?ˢ + #&$ˢ& # ˢ ?ˢ " # ?ˢ $/ˢ G# ˢ*# /ˢ ? +ˢ /# & /ˢG# ?ˢ " $ˢ- -#& #>ˢ $ /ˢ&$ / ˢ0>ˢ ˢ '# "ˢ#ˢ ?#ˢ$ˢ #* ˢ *ˢ +0 ℃ -- L /#Jˢ ˢ5.ˢ Gˢ G# ˢ0ˢ /# L - /ˢ ˢ& ˢ ?ˢ$? ℃ℓ & & # ˢ - &# ℳˢ ? #ˢ*$ L $&>ˢ ? "?ˢ $ˢ +$>ˢ ˢ?$'ˢ ? ˢ $+ˢ &?$ #>ˢ G# ?ˢ ?#+ *

A5 G152- '&: '&2-'4&(A4@5$51(@A':A -A5 2F E'12 A2F -4 ?51$5 -A5 2-A4 ':' ?4$515'G&?(2&F 5?D5:'2 C -A5 E4?- ?515&5 M*55&(?2C? 51F'&2&F 4 *E+*?('&B F*:5F A'E -4 2C 2?'F5 A'? ?:1*D 5? 2&F 5&:4*&-51 -A5 D51' ? 2&F 62-'G*5? 46 2&4-A51 $4C2G5 65@ @55H? +5641 5 A'? F5D21-*15 A5 15:5'$5F 2 G12:'4*? 5--51 6'4E 51F'&2&F 2&F ?2+5 2(-A5 2?- 5$51 2FB F15??5F -4 A'E +C A'? 14C2 E'?-15??(2??*1'&G A'E 46 -A5'1 D*1D4?5 -4 E2'&-2'& '&$'4 2-5 2 -A5'1 5&G2G5B E5&-? @'-A A'E(2&F -4 D51D5-*2-5 -A5 '&A51'-2&:5 46 A'? A4&4*1? '& A'? 62E ' C 9 4E641-5F 2&F :A551.

$&# '" # - #0 #"# $ /# #$ 0 / # $/ *
G# * *$0 #&$ # ? -$ *
: - &&#< # G?#&? #"? # L
/ / # + ?$' 0 L
"$ / /0> ? G + $ &#
$ /? ?# #$ *? ?
' $ $ $ $ /6 $
? # $ - &
?#+ ? G ' *- /# " '
$ > ?# " 0 > /? /# & ' >
* $ #$ $ *$ #&#-$ # " # '
$ >/ " ? '#+- $ & L
, & / # / * +
&?- #
& ? $-- $ $ & * '
'# "(: D ? $'$
?$ - 0 # ? /? ?# ? /' + '
(&&# / : #$" '> =
& 0 #+# (Y& & $# # "
$+ " ? ? ?# " # "# $
& /# " : - &&#('
+ #&$ ' >$" # $ /'
0>$? $? # # $ /* *$& '
?$ & /& + G# ?# ? ? & - '
* ?# # / *$ #"$0 $ &?
? G? +$ * #+ >
$/ # # #0 > ? & & L
?$ +0 # # /
? ?" > *0 # " ? #"# $
/# & ' * ? ? & #L
$ G $ $ # $ / ? '
G ? +# -? &&#
+ ### - - 234A 44(
? &?$ $& $* /' & $#+ *
: - &&#$ '/# & /'G# ?'+ &?
" # > $ /' &$ * J$+# $L
*$? # # 0> ?L
" # ?# +# # & & *
-$# (' ## - - F2E ,
? $? (& & # G?#&?
$' ? ' J /' , # * - #L
> * /# & ' > / $
$ " ? *$' $0 ? # L
" # > * ? #
1 6# / +# $ &$-
JJJ'## A 6 $ #& ?#
G # ? ? $> U& $ &#$
J $ /# $ #$ / ' , -$ &#$
& ' > # $K -
!$+$ $/# ? ?#K $ '#=
&# R 6# / $ / #0 '
&$- #

E4&G 4-A51 '&?-2&:5? 46 -A5 M*55&0? D51?4&2 15G21F 641 4B *E+*?(E2C +5 &4-':5F A51 15B :5'$'&G A'? -@4 ?4&?('5G4 2&F

5F +C -A5?5 2??*12&:5?(-A5 $5-512& &2$'G2-41(M*'-B -'&G -A5 D41- 46 2F'L 4& -A5 -A 46 21:A < ;(4&:5 E415 ?D152F A'? ?2' ? 641 -A4?5 G4 F5& 15G'4&?(@A':A A5 A2F 2DD142:A5F ?4 &521(+*- @2? F5?-'&5F &5$51 -4 152:A

- @' &4- +5 &5:5??21C -4 D*1?*5 A'? :4*1?5 6*1B -A51 -A2& -4 &4-':5 2 ?'&G 5 4::*115&:5 46 E4?- 5JB -1241F'&21C &2-*15 A5 2FE'12 A2F 15:5'$5F '&B ?-1*:-'4&? &4- -4 -4*:A 2- '?D2&'4 2 4& A'? 4*-@21F $4C2G5 A5 52HC :4&F'-'4& 46 4&5 46 A'? ?A'D?(A4@5$51(2&F -A5 ?'G&? 46 2& 2DD142:A'&G ?-41E('&B F*:5F A'E -4 ?55H 2 -5ED4121C 156*G5 -A515 2- -A5 ?2E5 -'E5(A5 :4*&?5 5F $2&F4 -4 F5 2C 641 2 65@ F2C? -A5 F5D21-*15 46 -A5 6 55-(-A5& 1'F'&G '& -A5 A21+4*1(@A':A @2? F5?-'&5F -4 :211C 4+2F' 2 2&F -A5 15+5 ?(@'-A -A5'1 ' .G4--5& -152?*15?(+2:H -4 U D2'& A5 :A*1 '?A G4$51&41(A4@5$51(&4- 4& C 156*?5F 4 *E+*? 2FE'--2&:5(+*- G2$5 41F51? 641 -A5 '&?-2&- F5D21-*15 46 -A5 $5??5 ? A5 2DD15A5&B ?'4&? 46 -A5 5JD51'5&:5F E21'&51 @515 6* C ,*?-'6'5F +C -A5 5$5&- :21:5 C A2F -A5 D2&'?A 6 55- M*'-B -5F '-? E441'&G?(+5641 5 4&5 46 -A4?5 -15E5&F4*? A*11':2&5? :2E5 4& @A':A ?4 46-5& F5?4 2-5 -A5?5 -14D':2 15G'4&?(?@55D'&G F4@& 5$51C -A'&G +5641 '-(2&F 65 @'-A ?*:A $'4 5&:5 4& -A5 '-- 5 &2$C(-A2- 4*- 46 5'GA-55& ?A'D?(46 @A':A '- @2? :4ED4?5F(&4-

$ / $? G -$" >$ /# $ & *2@E4 G ? / $? *# & P ? # *# / # " +$/ G? '#& ? >?$/* + > *? >$? ? / G# ?$ 0 $'$ + ## & $ $ > *@E EEE +$ $- #- 2F@. ' /# / + & #- 2@E

;

E 415 -A2& -A155 41 64 * 1 5? : 2D5F A5 15?- 2 64 * &B F515F('&: * F '&G -A4?5 @A' : A :4&-2'&5F 4+2F' 2 2&F -A5 2-5 5&5 E '5? 46 4 * E + * ? @4 A*&F15F -A4 * ?2&F 2?-5 2&4? 46 G4 F(A2 6 46 @A' : A +5 4&G5F -4 -A5 G4$51&E 5&-(@5&- -4 -A5 +4--4 E @'-A -A5 E A5 4& C 4&5 46 -A5 6 55- @A' : A E 2F5 '-? @2C +2 : H -4 D2'& @2? 2 : 12LC '-- 5 +21H(@A' : A :4&-2'&5F -A5 2F E '12 0? D14D51-C(2 E 4 * &-'&G -4 64 * 1 -A4 * ?2&F 4 * &: 5? 46 G4 F 4 :4 E D 5-5 -A5?5 : * 1'4 * ? : 4'&: 'B F5&: 5?(4 * E + * ? @'-A' A'? '-- 5 ?M * 2F14& 14F5 4 * - -A5 ?-41E '& ?265-C * &F51 -A5 55 46 -A5 '? 2&F(@A515 A5 A2F D1 * F5&- C -2H5& ?A5 -51 4& +5'&G ?4 1 * F5 C 15D * ?5F 614 E -A5 D41- A'? 5$5&.A2&F5F 15-1'+ * -'4& 46 , * ?-' : 5(?4 * &: 4 E E 4& '& A * E 2& 2662'1?(5F E 2&C -4 F'?: 51& -A5 'E E 5F'2-5 '&-51D4?'-'4& 46 14$'F5&: 5 -A51?('& 2 5?? A1'?-'2& -5 E D51(15651B 15F '- 2 -4 -A5 &5 : 14 E 2&: C 46 -A5 2F E '12 9

g 5- 21-C1(5 5+ * ? F5 E'12&-5(: 2D JJJ$''' > :52&' : '?(5: '' '+ J > 21'. 5&L4&'(4$ 1+ '?- : 2D +2C(4ED5&F '?-(F5 ?D2''2(J'' > 511512('?- 5& FM 2? -4E ''' '+ J'J : 2D J'$ > '?- &F'2?('+ $' : 2D ''

Z

6

46 -A5 :4 4 '2 D4 ':C D*1?*5F.
F*1'&G ?2+5 2?? '65-'E5 A2?? +55& A'-A51-4 F565115F(
'& 41F51 &4- -4 +152H -A5 &2112-'$5 46 4 *E+*?0??
[D51?4&2 2F$5&-*15?(?A2 &4@ 5&F52$4*1 -4 D15B
?5&- -A5 152F51 @'-A 2 +1'56 4*- '&5 46 '-(2?? 621 2??
:2& +5 :4 5:-5F 614E 'ED5165:- 2&F ?:2&-C E2-5B
1'2 ?N 641(A4@5$51 '&:4ED 5-5 '& '-?5 6('- +5:4E5??
'ED41-2&- 2?? :4&-2'&'&G -A5 G51E 46 -A5 G'G2&-':
C?-5E F5$5 4D5F '& 2-51 2G5?

51F'&2&F 2&F ?2+5 2 E2&'65?-5F 614E -A5 6'1?- 2&
52G51 2&F 5& 'GA-5&5F :*1'4?'-C '& 156515&:5 -4 -A5'1
&5@ 2:M*'?'-'4&?(:4&?-2&- C '&-5114G2-'&G -A5 2FE'B
12 E'&*-5 C 2?? -4 -A5'1 ?4' (:'E2-5(-A5'1 $21'4*??
$5G5-2+ 5 2&F E'&512 D14F*:-NU 2&F 5?D5:'2 C -A5
:A212:-51 46 -A5 *&:'$' 'L5F 12:5?? @A4 '&A2+'-5F
-A5E A5C D2'F -A5 G152-5?- F56515&:5 -4 A'??
?*GG5?-'4&?(2?? +56415 15E21H5FN 2&F '+512 C ?*DB
D '5F -A5 '&62&- ?5-- 5E5&- @'-A @A2-5$51(:4* F
:4&-1'+*-5 -4 '-?? &4*1'?AE5&- 2&F D51E2&5&- D14B
?D51'-C 9 A14*GA -A5'1 D14$'F5&- 2--5&-'4&('& 2

I # -$ #& $ '$ & $- $'$:#$" Y& +=
+0 /$ / " 2(5(< ## & #-)5.' $ $
:

$51C 65@ C521? 26-51 '-? F'?:4$51C(-A5 '? 2&F 46 '?D2&'4 2 @2? '& D4??5??'4& 46 -A5 E4?-' 'ED41-2&- F4E5?-':' 2&'E2 ?(2? @5 2? 61*'-? 2&F $5G5-2+ 5?([46 -A5 F 41 F(?4E5 46 @A':A A2$5 ?'&:5 :4&-'B &*5F -4 6*1&'?A -A5 ?-2D 5 46 2 621 E415 *:12-'$5 :4E E51:5 -A2& @2? 5$51 2&-':'D2-5F 614E '-? G4 F E'&5? 9

E'G12-'4& -4 -A5 &5@ :4*&-1'5? @2? 5&:4*12G5F +C -A5 '+512 -5&41 46 -A5 14C2 41F'&2&:5? D2??5F 614E -'E5 -4 -'E5 A5 ?5-- 51? '& '?D2&'4 2 @515 -4 A2$5 -A5'1 D2??2G5 6155N -4 +5 5J:*?5F 614E -2J5?N -4 A2$5 -A5 655 46 ?*:A D 2&-2-'4&? 4& -A5 '? 2&F 2? -A5C ?A4* F 5&G2G5 -4 :* -'$2-5 641 64*1 C521?N 2&F -A5C @515 6*1&'?A5F @'-A 2 G12-*'-4*? ?*DD C 46 G12'& 2&F ?-4:H 641 -A5'1 621E? 5JB D41-? 2&F 'ED41-? @515 5J5ED-5F 614E F*-C(26641FB '&G 2 ?-1'H'&G :4&-12?-' -4 -A5 &2114@ D4 ':C 46 2-51 2G5? '$5 A*&F15F D51?4&?('&: *F'&G ?:'5&-'6':' E5& 2&F 21-'?2&? 46 5$51C F5?:1'D-'4&(@515 ?5&-' 4*-' 2&F E2'&-2'&5F 2-' -A5 5JD5&?5 46 G4$51&E5&- &41F51 -4 D14$'F5 641 -A5 G152-51 ?5:*1'-C 2&F M*'5-' 46 -A5 '? 2&F($2&F4 @2? 2*-A41'L5F -4 G2-A51 -A5 15?'.

$0 $ + + #$ - /0> ? $/+# $ # ? $+ > $ # '' * ? ? '$ # & #L # * ? & > ' >#+ * G?#&?# -$ #& $ >$ G / 0> ? ' #" # $ +$? G# '' ? G $ #' > ? > & #/ / ?# "" # A 0#/ + #' --FFBA F(2

1 0 /$ '#/ & * ?# # * # ? /\'0> ? '' + L $ # * $ #& 0! & / # ? & $# /'#'$ /# $ & /$ / & 0 @ ?'2@E2 ? G# '' G# ? G?$ # /# & #+# $ ' L # > ?# ? $'>0 / G$ #+L - /* +' ? '*# ? + #+- $ - / & * ? +$ #L / > & -#$&# / > / $ /#$ + #' #0 #' # J'#' >##

F5&-?' '&-4' -4@&?(' @A':A' @515' 5&F4@5F' @'-A' -A5' D1'B $' 5G5?' 2DD51-2'&'&G' -4' ?'E' 21' :41D412-'4&?' '&' -A5' E4-A51' :4*&-1C% 2&F' 2' &*E+51' 46' E211'5F' E5&' @'-A' -A5'1' 62E' '5?' @515' 5&:4*12G5F' -4' 5?-2+ '?A' -A5E?5 $5?' '&' -A5E(' @'-A' -A5' $'5@' 46' G'$'&G' G152-51' ?4 'F'-C' 2&F' D51E2&5&:5' -4' -A5' ?5-- 5E5&-9

'-A' -A5?5' @'?5' D14$'?'4&?' @515' E'&G 5F' 4-A51?' ?2$4*1'&G' -44' ?-14&G C' 46' -A5' ' '+512' ?D'1'-' 46' -A5' 2G5' *:A' @515' -A4?5' D14A'+'-'&G')5@?(' 441?(' 41' '&F55F' 2&C' +*-' 2?-' '2&?(' 641' @A4E' -A5' F'?:4$51C' @2?' :4&?'F515F' 5J: *?'$5 C' -4' A2$5' +55&' E2F5(' 614E' '&A2+'-'&G(' 41' 5$5&' $'?'-'&G(' -A5' 5@' 41 F' A5' G4$51&E5&-' H5D-' 2' E4?-' ,52 4*?' 5C5' *D4&' @A2-' '-' 15G21F5F' 2?' '-?' 4@&' D5:* '21' D51M*'?'-5?(' 15?51$'&G' -4' '-?5 6' -A5' 5J: *?'$5' D4??5??'4&' 46' 2' E'&512 ?(' FC5.' @44F?(' 2&F' D15:'4*?' ?-4&5?(' -A2-' ?A4* F' +5' F'?:4$51B 5F'% 2&F(' 2 -A4*GA' D1'$2-5' D51?4&?' @515' 2 4@5F' -4' ?521:A' 641' G4 F(' -A5C' @515' ?*+,5:-5F' -4' -A5' 5J41+'-2&-' -2J' 46' -@4.-A'1F?(' ?*+?5M*5&- C' 15F*:5F' -4' 4&5.6'6-A(' 46'2' -A5C' ?A4* F' 4+-2'&(' 641' -A5' :14@&6

A5' E52?*15' @A':A' :4&-1'+*-5F' E415' 5665:-*2 C' -A2&' 2&C' 4-A51(' 2-' -A'?' D51'4F(' -4' -A5' D14G15??' 46' F'?B :4$51C' 2&F' :4 4&'L2-'4&(' @2?' -A5' ':5&?5' G12&-5F' *&.

I' $'$ &&# / :#' 3B' 2F2' A' 6 $' 6# $" ' +'##' &' #-' '3B' 8 $' #0'###'&$-'## A ## K' -#'2E ?'2(5@ A '2E4' 6# '/' ' ' / ' #0'' 2E@A 2E3' ' -#'F4 /'2(5)' &'JJJ#' A '&4' $>'B ?'2(5) A' ?' J& # ' *'* #" '$' '2F2' P >'FF /'2(5) A' $'$'0' $? #&' ?# #L 6 $'6# '8 $'/'$' L $ V'#'-$ #& $ >' & ++ /L /# ' &'#' #0'#'' &$-'J## /'0>' +0 '#'?#'*# '& +L *' $'$ ':#$" '>' & ' + #&$ # ' ? '& G ' #+ ' 0#+# ' +'##' &' #- :#$" '/'

F51 :51-2'& 15G* 2-'4&?('& <= (641 $4C2G5? *&F51B -2H5& +C D1'$2-5 '&F'$'F*2 ? 4 *?5 @2? E2F5 46 -A'? D51E'??'4& *&-' ?4E5 C521? 2-51(<= A5 ?D'1'- 46 5&-51D1'?5 A2F 6 2GG5F(2&F -A5 &2-'4& A2F 5JD51'B 5&:5F ?4E5-A'&G 'H5(F'?2DD4'&-E5&- 4& :4&-12?-'&G -A5 E52G15 15?* -? 46 -A5'1 4@& F'?:4$51'5? @'-A -A5 F2LL '&G ?*::5??5? 46 -A5 41-*G*5?5(@A4 A2F ?-1*:H 2- 4&:5 '&-4 -A5 $51C A521- 46 -A5 G4 F5& 2?- A5 15D41-? 46 -A5 2FE'12 0? -A'1F $4C2G5(A4@5$51(2&F -A5 +52*-'6* ?D5:'E5&? 46 D521 ? @A':A A5 ?5&- A4E5 614E -A5 :42?- 46 21'2(15$'$5F -A5 :*D'F'-C 46 -A5 &2-'4& 1'$2-5 2F$5&-*151? &4@ D14D4?5F -4 2$2' -A5E?5 $5? 46 -A5 ':5&?5 2 152FC G12&-5F(2&F -4 64 B 4@ *D -A5 -12:H 46 F'?:4$51C 4& -A5'1 4@& 2::4*&- A5 G4$51&E5&-(F12'&5F +C '-? 2-5 A52$C 5JD5&F'B -*15?(2&F ,52 4*? 46 -A5 ?D'1'- 46 E21'-'E5 2F$5&B -*15 +5G'&&'&G -4 ?A4@ '-?5 6 '& -A5 4-A51 &2-'4&? 46 *14D5(9 @' '&G C 2:M*'5?:5F '& 2 E52?*15 @A':A(@A' 5 '- 4D5&5F 2 @'F5 6'5 F 46 5&-51D1'?5 641 '-? ?*+B ,5:-?(?5:*15F -4 '-?5 6 2 -A5 ?*+?-2&-'2 +5&56'-? 46 F'?:4$51C(@'-A4*- 2&C 46 -A5 +*1F5&?

A5 ?A'D? 6'--5F 4*- *&F51 -A5 G5&512 ':5&?5 R@515 15M*'15F -4 15?51$5 4&5.-5&-A 46 -A5'1 -4&&2G5 641 -A5 :14@&(2? @5 2? -@4.-A'1F? 46 2 -A5 G4 F(2&F -5& D51 :5&-(46 2 4-A51 :4EE4F'-'5?(@A':A -A5C ?A4* F D14:*15 A5 G4$51&E5&- D14E4-5F

+ "' ?*# "' $/' L ?' + #&$* +' G* /L 'G ' ? ' G ' $0 'G? ' $ /'I ' G# ?# ' $'* G' / " ' *' $# /'# ' ? ' '#& ' *' ? ' "L #/$' ? ' & $&?# '" $ ' #' # ?' + $ &?' 6 >' : '2(5)' G ' ' ? ' ' >'*# /' *'/# & ' L $ /' $ ' / G ' ? 'G? '& $ ' * >'- && -# /' 0>' ? ' -$ #$ /

-A5?5 5JD5F'-'4&? +C 2 +4*&-C 4& 2 $5??5 ? 46 ?'J A*&F15F -4&? 2&F *D@21F?(5&G2G5F '& -A5E 9

'-A -A'? 5&:4*12G5E5&- -A5 E415 @52 -AC E51B :A2&-? 46 5$' 5(2F'L(2&F 2 4?(-A5 4 F -A52-15 46 &2*-':2 5&-51D1'?5(615'GA-5F 2&F ?5&- 4*- '-- 5 ?M*2F14&? 46 -A155 41 64*1 $5??5 ? 52:A(@A':A -A5C '&-1*?-5F -4 -A5 5JD51'5&:5F E21'&51? @A4 A2F 2:B :4ED2&'5F 4 *E+*? '& A'? 'E?- $4C2G5(41 ?'&:5 64 B 4@5F '& A'? 644-?-5D? A5C A5 F '& G5&512 -A5 ?2E5 :4*1?5 D*1?*5F +C -A5 2FE'12 4& A'? 2?- 5JB D5F'-'4&(5JD 41'&G -A5 :42?-? 46 -A5 G152- ?4*-A51& :4&-'&5&- 4E5 46 -A5 2F$5&-*151? 15-*1&5F @'-A ?*:A 1':A 615'GA-? 46 G4 F(D521 ?(2&F 4-A51 D15:'4*? :4EE4F'-'5?(2? @5 :4ED5&?2-5F -A5 62-'G*5? 2&F D51' ? 46 -A5 $4C2G5 +*- -A5 G152-51 &*E+51 @5'N5 4+ 'G5F -4 :4&-5&- -A5E?5 $5? @'-A -A5 E415 5&F*1B '&G(+*- +2115& A4&4*1? 46 F'?:4$51C "6

0 1 K 6# / ' / ? $/+# $ & #- 2 3 ? > "$ & $#+ G?#&? ? & /' +$D ' # $ &? JL - /# # $ G & / & / / ?#+ G$ = #"? ? *' $D J& - # $? #& ? $" $ /' # G$ " L * - #'$ ' >$" $ $ $ # L * # " + * ?# G - L "$ #' # # /#**#& L / $ /# G?$ G$> ? G ' ? # ?# "# ?# #"# $ &$-# $ # G# ? ? " ' L + ?$'# "* & ? +$ & @ . G?# # ? -$ +$/ - '# ?# & /' >= 0 $" ? #"? *" $ # "* #L & # J- > ' / ? ?& G $ /' ? - # = /$ &$, $ > G# ? G?#&? ?# # $ & /' ? G ?$?

S 6

A5 2:-'$5 ?D'1'- 46 5&-51D1'?5 &4@ 2@2H5&5F(2&F -A5 E415 5& 21G5F :4E E51:'2 15 2-'4&? @'-A -A5 &5@ :4 4&'5?(15M*'15F 2 E415 D5165:- 41G2&'?2B -'4& 46 -A5 F5D21-E5&- 641 &F'2& 2662'1?(-A5 521 '5?- $5?-'G5? 46 @A':A A2$5 +55& 2 152FC &4-':5F '& 2 D15B :5F'&G :A2D-51 9 C 2& 1F'&2&:5 F2-5F 2- :2 2( )2&. ; -A(< ('- @2? D14$'F5F -A2- 92 +421F ?A4* F +5 5?-2+ '? '5F :4&?'?-'&G 46 -A155 6*&:-'4&21'5?(@'-A -A5 -'- 5? 46 -152?*151(62:-41(2&F :4ED-14 51 A5'1 D51E2&5&- 15?'F5&:5 @2? 2??'G&5F '& -A5 4 F 2 :2L21 46 5$' 5(@A515 -A5C @515 -4 E55- -4G5-A51 5$51C F2C 641 -A5 F5?D2-:A 46 +*?'&5?? A5 +421F @2? 5JD5:-5F -4 E2H5 '-?5 6 -A414*GA C 2:M*2'&-5F @'-A @A2-5$51 :4&:51&5F -A5 :4 4&'5?(2&F -4 26641F -A5 G4$51&E5&- 2 '&641E2-'4& -A2- :4* F +5 4+-2'&5F 2665:-'&G -A5'1 '&-515?-? 2&F :4EE51:'2 D14?D51'-C - @2? 5ED4@515F -4 G12&- ':5&?5? *&F51 -A5 15G*B 21 :4&F'-'4&?(-4 D14$'F5 641 -A5 5M*'DE5&- 46 6 55-?(-4 F5-51E'&5 -A5'1 F5?-'&2-'4&(2&F 6*1&'?A -A5E '&B ?-1*:-'4&?(4& ?2' '&G E51:A2&F'?5 641 5JD41-2B -'4& @2? -4 +5 F5D4?'-5F '& -A5 2 :2L21(@A515 -A5 15-*1& :21G45? @515 -4 +5 15:5'$5F(2&F :4&-12:-? E2F5 641 -A5'1 ?2 5 'E' 21 2*-A41'-C @2? G'$5& -4 '- 4$51 -A5 -12F5 @'-A -A5 21+21C :42?-(2&F -A5 2&21C '? 2&F? -? ?*D51$'?'4& @2? -4 5J-5&F '& 'H5 E2&&51 4$51 2 $5??5 ? @A':A E'GA- -2H5 -A5'1

?4$515'G&?(@'-A 2& A4&5?- F5?'15 46 H55D'&G -A5'1 5&G2G5E5&-? @'-A 4*E+*?(A2F &4- 2 $51C : 521 D51:5D-'4& '& @A2- E2&B &51 -A5C A2F +55& $'4 2-5F 21-C1(5 5+*? :52&:'?(5:'' '+'J > 511512('?- 5& F5 2? &F'2?('+'$:2D J' > 5&L4&'(4$ 1+'? '?-(:2D J''' 21- '' :A2D(J$''' 46 -A'? '?-41C

F5D21-*15 614E -A5 D41- 46 2F'L(2? @5 2? 614E 5$' 5 '-A -A5?5 D4@51? @515 :4E+'&5F 4-A51? 46 2 D*15 C,*F':'2 :A212:-51(2*-A41'L'&G -A5E -4 -2H5 :4G&'?2&:5 46M*5?-'4&? 21'?'&G 4*- 46D21-':* 21 $DC2G5?(2&F 46 -A5 :4 4&'2 -12F5 '& G5&512 & -A'? 2--51 :2D2:'-C -A5C @515 -4 +5 2??'?-5F +C -A5 2F$':5 46-@4,*1'?-?(E2'&-2'&5F +C 2 15G* 21 ?2 21C 614E -A5 G4$51&E5&-9

:A @515 -A5 5J-5&?'$5 D4@51? '&-1?-5F -4 -A5 62E4*? (4& 41 A4*?5 46 -12F5(4& -A'? '-? 6'1?- F56'&'-5 41G2&'?2-'4&M 2&F 2 -A4*GA '-? 2*-A41'-C @2? ?*+?5M*5&- C ?4E5@A2- :'1:*E?:1'+5F +C -A5 2DD5 2&- ,*1'?F':-'4& 46 -A5 :4*&:' 46 -A5 &F'5?('- A2? 2 @2C? :4&-'&*5F -A5 G152- 41G2& +C @A':A -A5 :4EE51:'2 -12&?2:-'4&? @'-A -A5 :4 4&'5? A2$5 +55& :4&F*:-5F 2&F :4&-14 5F

" A5 D2&'?A G4$51&E5&-(@A' 5 -A*? ?5:*1'&G -4 '-?5 6 -A5 E415 52?C 2&F 5J: *?'$5 E2&2G5E5&- 46 -A5 :4 4&'2 -12F5(+C :4&6'&'&G '- @'-A'& 4&5 &2114@ :A2&&5 (F'?:4$515F -A5 E4?- 2FE'12+ 5 6415?'GA- '& D14$'F'&G 641 '-? 2+?4 *-5 ?*D15E2:C '& 5:: 5B ?'2?-':2 2662'1?(@A515 2 4&5 '- :4* F +5 :4&-5?-5F C 2 +* 46 5J2&F51 (F2-5F 4$5E+51 -A(< <(-A5 ?4$515'G&? @515 5ED4@515F -4 15:5'$5 2 -A5 -'-A5? '& -A5 :4 4&'2 F4E'&'4&? "7" &4-A51 +*

I $'$ &&# # / '# $'$ 2@E4 A 6 $'6# :#$" + '## & #- '2(3 / '$ / '#0'' &$-'J## A $- A K$ '> > $ # #&$ '$"# :#$""# '* '2@ /#$ $< / $/ #/'2))B #0' ? #"# $'0 $-' '#'&$-'J'## A # $" / '$'$ + '## - / 'J#' $ $ $&# / '$ /#$' $ /'$ -$ # ?' # *'#'# ' && #0'#'&$-'#. / '# $' K$ # #&$ /#$ $' #0' 2B)F A 9 #"$' $ / 'L #''&$-'#' &''##

= 6

46 4D5) * '*? (') * C ; S-A(' < S(' G12&-5F -A5E -A5 1'GA- 46 :4 2-'&G -4 2 +5&56':5? 46 @A2-5$51 F5?:1'D-'4&' '&-A5 :4 4&'5?(?*+,5:-4& C -4 -A5 2DD14B +2-'4& 46 -A5 A4 C ?55 C -A5?5 -@4 :4&:5??'4&? -A5 D2&'?A :14@&' @2? D 2:5F 2- 4&:5 2- -A5 A52F 46 -A5 :A*1:A '&' -? 12&?2- 2&-':' F4E'&'4&?(' @'-A -A5 2+?4 *-5 F'?D4?2 46 2 '-? F'G&'-'5? 2&F 5&'4 *.' E5&-?9

- A2? 5J:'-5F -A5 2FE'12-'4& 46 E415 -A2& 4&5 A'?-41'2&(' -A2- 51F'&2&F 2&F ?2+5 2(' @'-A -A5'1 15$515&:5 641 -A5 2-A4 ':' :A*1:A(' ?A4* F A2$5 A2F -A5 :4*12G5 -4 2??*E5 2& 2--'-*F5 46 ?*:A 5&-'15 '&B F5D5&F5&:5 46 '-? ?D'1'-*2 ' :A'56 6 *- @A45$51 A2? ?-*F'5F -A5'1 15'G&' @' 15G21F -A'? E52?*15 2? D51B 65:- C :4&641E2+ 5 -4 -A5'1 A2+'-*2 ' D4 ':C(' @A':A &5$51 ?*6'515F 2 L52 641 15 'G'4&(' 41 2 + '&F F5651B 5&:5 -4 -A5 :A*1:+(' -4 :4ED14E'?5 '& 2&C F5G155 -A5 '&F5D5&F5&:5 46 -A5 :14@&' - '? E*:A E415 2?-4&B '?A'&G -A2- D4&-'66? :4* F +5 64*&F :4&-5&- -4 F'$5?- -A5E?5 $5? 46 ?*:A 'ED41-2&- D1514G2-'$5? - @2? F5$'2-'&G @'F5 C 614E -A5 ?*+- 5 2&F -5&2:'4*? ?D'1'- 46 -A5'1 D15F5:5??41?M 2&F(' 2? -A5 :4&?5M*5&:5? :2E5 -4 +5 E415 6* C F'?: 4?5F(' 6*1&'?A5F 2ED 5 ?*+,5:- 46 15G15- -4 -A4?5 @A4 ?*::55F5F -A5E

*:A '? 2 +1'56 ?*EE21C 46 -A5 D1'&:'D2 15G* 2B -'4&? 2F4D-5F +C 51F'&2&F 2&F ?2+5 2 641 -A5 2FB E'&'?-12-'4& 46 -A5 :4 4&'5? 2&C 46 -A5'1 D5:*.

9 4 41L2&4(4'- &F -4E -E4&G 4-A51? ?55 2C&2(''('+ '$:2D '' ?5:'J > &641E5 &F'5?(&G -12&? $4 '$ D ; F5 4& G*?-'& '4 (2D 5E > 4+51-?4&\? E51':2($4 ''' 1*F'-4(-4E ''' DD < (< < -; S M -A 5F'-

'21'-'5?(‘ '&: *F'&G‘ E4?-‘ 46‘ -A5'1‘ F565:-?(‘ 215‘ -4‘ +5‘ 1565115F‘ -4‘ -A5‘ D5:* '21‘ :'1:*E?-2&:5?‘ *&F51‘ @A':A‘ -A5‘ F'?:4$51C‘ 46‘ -A5‘ 5@‘ 41 F‘ @2?‘ 5665:-5F‘ ! &B 'H5‘ -A5‘ ?5-- 5E5&-?‘ 4&‘ -A5‘ :4ED212-'$5 C‘ ?-51' 5‘ ?A415?‘ 46‘ 41-A‘ E51':2(‘ @A':A‘ @515‘ D51E'--5F‘ -4‘ F5$'?5‘ 2@?‘ 2::4EE4F2-5F‘ -4‘ -A5'1‘ &5:5??'-'5?(‘ 2&F‘ -4‘ G2-A51‘ ?-15&G-A‘ '&‘ -A5‘ A2+'-*2‘ 5J51:'?5‘ 46‘ D4 '-':2‘ 6*&:-'4&?(‘ -A5‘ D2&'?A‘ :4 4&'5?‘ @515‘ 614E‘ -A5‘ $51C‘ 6'1?-‘ :A5:H5F‘ 2&F‘ :4&-14 5F‘ +C‘ -A5‘ 4$51. 5G'? 2-'4&‘ 46‘ -A5‘ D215&-‘ :4*&-1C‘ A5‘ 41'G'&2‘ D14,5:-‘ 46‘ F'?B :4$51C‘ A2F‘ +55&‘ 5&-515F‘ '&-4‘ @'-A‘ &F56'&'-5‘ 5JB D5:-2-'4&?‘ 46‘ G2'&‘ A5‘ $51'6':2-'4&‘ 46‘ 4 *E+*?0?‘ -A541C‘ 46‘ -A5‘ 5J'?-5&:5‘ 46‘ 2&F‘ '&‘ -A5‘ 5?-‘ G2$5‘ D4B D* 21‘ :15F'-‘ -4‘ A'?‘ :4&,5:-*15‘ -A2-‘ -A2-‘ 2&F‘ @2?‘ -A5‘ 621.62E5F‘ &F'5?‘ A5‘ ?D5:'E5&?‘ 46‘G4 F(‘ 2&F‘4-A51‘ D15:'4*?‘ :4EE4F'-'5?‘ 64*&F‘ -A515(‘ ?51$5F‘ -4‘ E2'&B -2'&‘ -A5‘ F5 *?'4&‘ A5‘ D2&'?A‘‘G4$51&E5&-‘ 15B G21F5F‘ -A5‘ 5JD5F'-'4&‘ 2?‘ '-?‘ 4@&‘ D1'$2-5‘ 2F$5&-*15(‘ -4‘@A4?5‘ +5&56'-?‘ '-‘ A2F‘ 5J: *?'$5‘D15-5&?'4&?‘ 5&:5‘ -A4?5‘ ,52 4*?‘ 15G* 2-'4&?‘ 641‘ ?5:*1'&G‘ -4‘ '-?5 6‘2‘ E4B &4D4 C‘ 46‘ -A5‘ E4?-‘ 4+$'4*?‘ ?4*1:5?‘ 46‘D146'-(‘ -A5‘ FC5.‘ @44F?‘ 2&F‘ -A5‘D15:'4*?‘ E5-2 ?

A5?5‘ 'ED4 '-':‘ D14$'?'4&?‘ 215‘ 15 '5$5F‘ +C‘ 4-A51?‘ +5--51‘ ?*'-5F‘ -4‘ -A5‘ D51E2&5&-‘ '&-515?-?‘ 46‘-A5‘ :4 4&C‘ *:A‘ @2?‘ -A5‘ +4*&-C‘ 466515F‘ '&‘ $21'4*?‘ @2C?‘ 4&‘ -A5‘ 4::*D2-'4&‘ 2&F‘ :* -*15‘ 46‘ 2&FM‘ -A5‘ 515:-'4&‘ 46‘ E*&':'D2 '-'5?M‘ -A5‘ 1'GA-‘ 46‘ '&-51:4 4&'2‘ -1266':(‘ 2&F‘ 46‘ 5JD41-'&G‘ 2&F‘ 'ED41-'&G‘ E51:A2&F'?5‘ 46‘ 5$51C‘ F5?:1'D-'4&‘ 6155‘ 46‘ F*-C 9‘ A5?5‘ 2&F‘ ?'E'21‘ 2@?

9‘ *&4L,‘ *5$4 *&F4('+‘$‘ ?5:‘ JJJ''‘ JJJ''' > 51.

?A4@ -A2- -A5 G4$51&E5&-(621 614E 15G21F'&G -A5 :4 4&'5? E515 C 2? 2 6415'G& 2:M*'?-'4& -4 +5 ?2:1'B 6':5F -4 -A5 '&-515?-? 46 -A5 E4-A51 :4*&-1C(2? 2- 2 2-51 D51'4F(@2? F'?D4?5F -4 5G'? 2-5 641 -A5E 4& E415 G5&514*? D1'&:'D 5?(2? 2& '&-5G12 D41-'4& 46 -A5 E4&21:AC

4E5 46 -A5 E52?*15?(5$5& 46 2 5?? '+512 -5&41(E2C +5 5J:*?5F(2? ?*66':'5&- C 2::4EE4F2-5F -4 5J'?-'&G :'1:*E?-2&:5? 4 15G* 2-'4&(641 5J2ED 5(@2? 64*&F 5$5&-*2 C E415 E'?:A'5$4*? '& '-? 4D5B 12-'4& -A2& -A2- @A':A :4&6'&5F -A5 :4 4&'2 -12F5 -4 -A5 ?'&G 5 D41- 46 5$' 5('&?-52F 46 D51E'--'&G '- -4 6'&F 2 6155 $5&- '& -A5 -A4*?2&F 2$5&*5? &2-*12 C 4D5&5F '&5$51C D21- 46 -A5 H'&GF4E -4 ?2C &4-A'&G 46 -A5 G1'5$4*? 1&4&4D4 '5? 2&F 5J2:-'4&? 641 @A':A -A'? :4&:5&-12-'4& 46 2 E'GA-C -1266':' 4& ?4 ?E2 2 D4'&- @2? 64*&F('& 2-51 -'E5?(-4 26641F *&+4*&F5F 62:' '-C +*- -A5 :4 4&'2 -12F5 @2? -44 'E'-5F '& '-? 5J-5&-(*&F51 51F'&2&F 2&F ?2+5 2(-4 '&$4 $5 ?*:A :4&?5M*5&:5? - @2? :A'56 C :4&6'&5F -4 2 65@ @52 -AC ?52D41-? &F2 *?'2(614E @A4?5 $':'&'-C -A5 6'1?- 2F$5&-*151? A2F ?2 '5F 641-A 4& -A5'1 :21551 46 F'?:4$51C - @2? &4 '&:4&$5&'5&:5 -4 -A5E -4 A2$5 2 :4EE4& D41- 46 5&-1C ?4 :5&-12 2&F 2::5?B ?'+ 5 2? 5$' 5(@A':A(E4154$51(+C -A'? 2112&G5B E5&- +5:2E5 2 G152- E21- 641 *14D52& -12F5 -A*? 26641F'&G(2 :4&$5&'5&- E21H5- -4 -A5 :4*&-1C 641 5665:-'&G '-? :4EE51:'2 5J:A2&G5? @'-A 5$51C M*21.

1512 '?-(F5 2? &F '+ '$(:'4&(-4E '' 4: 'D 4 :2D J' J'' > 2$2115-5(45:. S

-51 46 A1'?-5&F4E 9 -@2? 4& C @A5& 2@? 2F2D-B 5F -4 -A5 '&:'D'5&- ?-2G5? 46 :4E E51:5 @515 D51D5B -*2-5F -4 2 D51'4F @A5& -A2- :4E E51:5 A2F ?@5 5F -4 ?*:A" G'G2&-': F'E5&?'4&? 2? -4 5E+12:5 5$51C M*21-51 46 -A5 5ED'15(-A2- -A5'1 G14?? 'ED4 ':C +5B :2E5 E2&'65?-

-@4* F &4- +5 G'$'&G 2 62'1 $'5@ 46 -A5 G152- 4+B ,5:-? D14D4?5F +C -A5 D2&'?A ?4$515'G&? '& -A5'1 ?:A5E5? 46 F'?:4$51C(-4 4E'- 4&5 D212E4*&- -4 2 -A5 15?-(I '-A -A5 M*55& 2- 52?-(> -A5 D14D2G2-'4& 46 A1'?-'2&'-C 2E4&G -A5 A52-A5& A5:4&$51?'4& 2&F :'$' 'L2-'4& 46 -A'? ?'ED 5 D54D 5 641E(2? A2? +55& 2 152FC ?2'F(-A5 +*1F5& 46 E4?- 46 A51 466':'2 :4EB E*&':2-'4&? 614E -A5 521 '5?- D51'4F 6 A5 &5GB 5:-5F &4 E52&? 641 -A5 6*1-A512&:5 46 -A'? G44F @41H(-A14*GA -A5 2G5&:C 46 E'??'4&21'5? 5J: *?'$5 C 0F5$4-5F -4 '-(@A4 @515 -4 5?-2+ '?A -A5'1 15?'F5&:5 2E4&G -A5 &2-'$5?(2&F @'& -A5E -4 -A5 -1*5 62'-A +C -A5'1 '&?-1*:-'4&?(2&F -A5 5F'6C'&G 5J2ED 5 46 -A5'1 4@& '$5? -@2? @'-A -A5 F5?'G& 46 2E5 '4B 12-'&G -A5 :4&F'-'4& 46 -A5 &2-'$5?(-A2- ?A5 ?2&:-'4&. 5F -A5 '&-14F*:-'4& '&-4 -A5 :4 4&'5? 46 &5G14 ? 2$5? +41& '& D2'&(/< < 7 A'? ?A5 F'F 4& -A5 15D15.

N ? ' ?# #$ ' *' '# ' ' $'$ - ' + ' ## ' & ' + # ' ?$ ' # ' G$ ' ? ' ' #-' ' (@ ' ' & ' $ A $ ' - &#$ > ' *' ? ' + &?$ ' *' $ $ ' $+#/ ' ?# ' -$ # '" $ / ' G# ?' G? +' $' + ' & / + $ # ' *' ? ' " # >' / ' # #+$ ' # & ' ?$/' 0 ' $+- ' ! #& ' ' ? ' - ' $ /' - /' 0>' ? ' # +$ #$" ' *' " ' ? "?' $ $ % $L ? ' >$ ' *$+# >' G# ?' ? ' ? ' '$# # "' ** ' *' ? ' , ' *' " />' ' $ ' =' ' ; > ' + ' # ' -- ' F2 ' & $ ' >' && #$ #& ' / ' L 4E) ' 45@ ' ' $ #0# '# $ ' - ' (2@

==

?5&-2-'4&' -A2-' -A5' DAC?':2' :4&?-'-*-'4&' 46' -A5' 61'B :2&' @2?' E*:A' +5--51' 6'--5F' -A2&' -A2-' 46' -A5' &F'2&' -4' 5&F*15' ?5$515' -4'' *&F51' 2' -14D':2' :'E2-5' 4' -A'?' 62 ?5' D1'&:'D 5' 46' 5:4&4E'L'&G' A*E2&' ?*6651'&G(' @5' 215' '&F5+-5F' 641' -A2-' 64*' ?-2'&' 4&' -A5' 5@' 41 F(' @A':A' A2?' G14@&' F55D51' 2&F' F21H51' @'-A' -A5' 2D?5' 46'C521?9

?2+5 2(' A4@5$51(' @2?' F5?-'&5F' -4' A2$5' A51' +5.' &5$4 5&-' F5?'G&?' '&' 15G21F' -4' -A5' &2-'$5?' F5652-5F' +C' A51' 4@&' ?*+,5:-?' A5' D4D*21' F4:-1'&5' 46' -A5' 2+?4 *-5' 1'GA-?' 46' -A5' A1'?-'2&' 4$51' -A5' A52-A5&(' ?55E5F' -4' @2112&-' -A5' 5J2:-'4&' 46' 2+4*1'614E' -A5?5' *&A2DDC' +5'&G?' -4' 2&C' F5G155' @A':A' 2$21':5' 4&' -A5' 4&5' A2&F' :4* F' F5E2&F(' 41' A*E2&' 5&F*12&:5' :4&B :5F5' 4&' -A5' 4-A51' A5' F5$':5' 46'-A5' ')(' ?C?-5E2-'L5F' 2&F' :4ED 5-5F' -A5' @A4 5' ?:A5E5' 46' 4DD15??'4&' A5' M*55&(' '-' '?' -1*5(' 2+4 '?A5F' -A5E' *&F51' $2&F4⓪?' 2FE'&'?-12-'4&(' 2&F' F5: 215F' -A5' &B F'2&?' R' 2?' 6155' 2?' A51' 4@&' ?*+,5:-?K'6' *-' A'?' 15B D15?5&-2-'4&(' -A2-' -A5' &F'2&?(' @A5&' &4' 4&G51' :412.

1' 6 $' 6# ' 8 $' /' $' /' #0' #'' &' J## A '" /' $&& ' *' ?' # / & # ⓪ *' " ' $' >' # ' ?' G' 7 /' & +- ? /# '" ?' +$L #$' *$& ' $ /' + ' # ' D G ' +$>' 0' * /' #' ?' *#* ?' &?$- ' *' $ & *⓪' 6# L >' *' ?' # /' $ <' $' G D' # ' G?#&?' ?' $? ' ?$' ? G ' # " $' $// '#'& $L # '" $' # >' *' # ' ' *' N$ 0! &' G?#&?' #' # ' $ >' $" ' G /' +' ' G$ ' >' ? ' # >' ' #' ?T' / *#&# &>' *' ?# ' - 0$0 >' G?#&?' ?$' - ' /' ' 8 $=' ?$+ ⓪' '$ $0 '?# >'* +'$ L $# # '" ?' - - $ # >' ' G?#&?' # ' #/' + # '! >' # '#' Ñ ? /' #? ' +$# # '" ' + ' *' ' $ & *⓪' G D' 0' & L / & /' G# ?' , $' -# # ' &? L $?#-' $ /' #+-$ #$ # >' G# ?' ? G ' # " $' $// '#'& $L # '" $' # >' *' # ' ' *' *$#' ' $D' $' - +$ ' $ ' # ' + #&$ ' # $ # ' ' 6 $' #0' #'' &' J#

D5 5F -4 @41H(@'-AF'05@ 614E 2 '&-51:4*1?5 @'-A -A5 A1'?-'2&?(-A*? 2&&'A' 2-'&G 2- 4&:5 2 A4D5? 46 -A5'1 :4&$51?'4&(?*+?5M*5&- C '&F*:5F A51 -4 :4&?5&- -A2- -A5C ?A4* F +5 15M*'15F -4 2+4*1 E4F512-5 C(2&F 641 2 152?4&2+ 5 :4ED5&?2-'4& 9 A'? @2? :4&B ?-1*5F @'-A -A5'1 *?*2 2-'-*F5 +C -A5 D2&'21F?(@A4 ?44& 15$'$5F-A5 4 F ?C?-5E 46F'?-1'+*-'4&4& ?4 -511'6':' 2 ?:2 5(-A2- 2 5--51 46 4*E+*?(@1'--5& ?A41- C 26-51 ?2+5 20? F52-A(15D15?5&-? E415 -A2& ?'J.?5$5&-A? 46-A5 @A4 5D4D* 2-'4& 46 '?D2&'4 2 -4 A2$5 E5-5F 2@2C *&F51 '-P6 A5 M*55& @2? -44 621 15E4$5F -4 5&641:5 -A5 5J5:*-'4& 46 A51 4@& +5B &56':5&- E52?*15?(&41 '? '- D14+2+ 5 -A2- ?A5 5$51 'E2G'&5F -A5 5J-5&- 46 -A5'1 $'4 2-'4&(641 -A515 @2? &4 '&-15D'F DA' 2&-A14D'?-('& -A2- F2C('H5 2? 2?2?(-4 D14:2'E -4 -A5 @41 F -A5 @14&G? 2&F ?41. 414@? 46-A5 &F'2& %\N :4&$':-'4&(A4@5$51(46-A5

1 &FE ?2@E4 A 6 $ #0 '& J# A ?# & # '$ /'# $'$ + ## & #- 2@4 . R $> ? +' " $ G$" V $> ? /# $ & U * ? # $0 V !& + - $ *#0 & + > & + # ' V $ $ $ G? $ $ > ? # L & # A G?#&? 0> ?$ +# /$ / A J- ? $ &# +$ # G?#&? ? > 0G '# $ /'# ' > -$ #& $ 0> '$ /'$ /' ?# && ' ' + '#' - 4E5 ,

-' +'F(*+' ?*D12 > 2? 2B ?2?('?-' &F '+' '' :' JJJ$'

$-' '# "' ' ### -' (2F A ?' ' $0 '0# ? -'& *# + ?# '* #"?* ' -#& ' */ $L # ' # ' # '* ' J ' # '?# '$ # ' + + #$ ' - -$ /'* ? '& &#' *' ?' /# ' L ' ' + '#' -$ #+ P $ ' $ $ '+$/ '?# '*# '' >L $" ' ' ? ' /# ' #' #' ' # ' 2(53 ' $ ' $ ' 2@EF 0 ' ? ' # ' ' $& ' *' ?# ' $D# " $ ' $& #' ' -$ ' # ' / &# " ? ' -- # ' *' ? ' -$ #$ / ' $ # ' ?$ ' 2@2E' G? ' ? ' & +0# /'?# ' ** ' G# ?' ? ' *' ? ' +# #&$ ' +# # $ # ' $ >' $ #' /' # ' ' +# " ' # ' ? ' $+ '" /' G D' 'G$ ' ' #' + ' > $ ' $ <

=

&@41-AC -152-E5&- 46 -A5 &2-'$5? ?55E? -4 A2$5 D15??5F A52$' C &A51 A521-N 641 '& 2 :4F':' -4 A51 -5?-2E5&-(F2-5F 2 65@ F2C? 4& C +56415 A51 F52-A(U?A5 '&$4H5? -A5 H'&F 46 :5? 46 A51 ?::5??41 '& -A5'1 +5A2 6 '& ?*:A ?-14&G 2&F 2665:-'4&2-5 2&G*2G5(2? D 2'& C '&F':2-5? A4@ '&-5&- C A51 -A4*GA-? @515 4:B :*D'5F @'-A -A5'1 :4&F'-'4& F4@& -4 -A5 2?- A4*1 46 A51 5J'?-5&:5 9

A5 E412 G12&F5*1 46 -A5 E21'-'E5 F'?:4$51'5? *&F51 -A'?15'G& E*?-&4- ?4 621 F2LL 5 *?(2? -4 52F -4 2 $51C A'GA 5?-'E2-5 46 -A5'1 'E E5F'2-5 15?* -? '& 2& 5:4&4E':2 $'5@ 4?- 46 -A4?5 21-': 5? @A':A A2$5 ?'&:5 641E5F -A5 G152- ?-2D 5? 46 4*-A E51':2& :4E E51:5(2? :4:42('&F'G4(:4:A'&52 (-4+2::4( ]: @515 5'-A51 &4- H&4@& '& ?2+5 20? -'E5(41 &4- :* -'B $2-5F 641 5JD41-2-'4& E2 M*2&-'-'5? 46 :4--4&.A2F +55& +14*GA- -4 D2'&(+* - '- @2? F4*+-5F @A5-A51 -A5 D146 '- @4* F :4ED5&?2-5 -A5 5JD5&?5 46 12'?'&G '- A5 ?*G21.:2&5 A2F +55& -12&?D 2&-5F '&-4 '?D2B &'4 2(2&F -A1'$5F *J*1'2&- C '& '-? G5&'2 ?4' N +* - '- 15M*'15F -'E5 -4 G14@ '- -4 2&C :4&?'F512+ 5 2E4*&- 2? 2& 21-': 5 46 :4ED5:5(2&F -A'? @2? ?-' 6*1-A51 F5 2C5F +C -A5 F'?-12:-'4&? 2? @5 2? 2$21':5 46 -A5 :4 4&C(@A':A G12?D5F 2- &4-A'&G 5?? ?*+B ?-2&-'2 -A2& G4 F '-?5 6 A5 4& C $5G5-2+ 5 D14B F*:- 5J-5&?'$5 C *?5F '& -12F5 @2? -A5 12L' .@44F(

2@2@ ?$? / -$# A #& # #0 '$
$ / - $/ / ? &$ * ? # L + #=M- 252 25F
! / $ #' 0 * ? ? I ? G# $- / + =# / $? = # & : $ # / 6# #$ - +# / $ $ $ + #' -- 2A 432

@A4?5 +52*-'6* FC5 2&F DD ':2-'4& -4 $21'4*? 41&2B E5&-2 D*1D4?5? E2F5 '- 614E -A5 6'1?- 4&5 46 -A5 E4?- 'ED41-2&- E4&4D4 '5? 46 -A5 :14@&

A5 2::4*&-? 215 -44 $2G*5 -4 26641F 2&C D14+2+ 5 5?-'E2-5 46 -A5 D15:'4*? E5-2 ? 4+-2'&5F 614E -A5 &5@ -511'-41'5? D15$'4*? -4 $2&F40? E'??'4& 5B 6415 -A5 F'?:4$51C 46 -A5 E'&5? 46 2C&2 '- @2? :51B -2'& C $51C '&:4&?'F512+ 5 A5 ?'L5 46 ?4E5 46 -A5 ?D5:'E5&? 46 415 64*&F -A515 @D* F ?*GG5?- E2G&'B 6':5&- 'F52? 46 -A5'1 4D* 5&:5 &5 D'5:5 46 G4 F '? 15D41-5F +C -A5 :4&-5ED4121C A'?-41'2&? -4 A2$5 @5'GA5F ; 2?-5 2&4?(2&F -4 A2$5 +55&(?4 21G5 -A2- -A5 D2&'21F? ?51$5F *D 2 142?-5F D'G 4&' '-(+42?-'&G -A2- &4 D4-5&-2-5 '& *14D5 :4* F F'&5 466 ?4 :4?- C 2 F'?A 9 A5 2FE'12 0? 4@&? ?-2-5E5&-(-A2- -A5 E'&51? 4+-2'&5F 614E ?'J G4 F 2?-5 2&4? -4 :&5 A*&F15F 41 5$5&' -@4 A*&F15F 2&F 6'6-C '& 2 F2C(2 4@? 2 2-'-*F5 -44 G152- -4 52F -4 2&C F56'&'-5 :4&: *?'4& 6 415 -2&G'+ 5 5$'F5&:5 46 -A5 1':A5? 46 -A5 '? 2&F '? 26641F5F +C -A5 62:-(-A2- ; (2?-5 2&4? 46 G4 F @5&- F4@& '& -A5 ?A'D? @'-A 4. +2F' 2 +*- -A'?('- E*?- +5 15E5E+515F(@2? -A5 61*'- 46 G'G2&-':5 566641-?(:4&-'&*5F *&F51 2 ?C?-5E 46 *&5J2ED 5F 4DD15??'4& 641 E4'.5 -A2& -@4 C521? 4 -A'? -5?-'E4&C E'GA- +5 2FF5F -A2- 46 -A5 @5 . '&641E5F A'?-41'2& 46 5$' 5(@A4 '&651? 614E ?5$512

9 511512('?- 5& F5 2? JJJ'$ 2D 21:'2('?-41'2F415? &F'2?(!+ $:2D ' > '?-(F5 1'E'-'$5?(-4E ' E'12&-5(:2D JJJ'$ > $'B & :#$" / 5F4(52:'4& *E21'2 F5 2 $- $'$ &&# / '?- 2-*1 F5 2? &F'2?(:2D :#$" + '# - F) (

=S 6‘ ‘

14C2 ‘ 41F'&2&:5?(‘ -A2-‘ -A5‘ '&6 *J‘ 46‘-A5‘ D15:'4*?‘ E5B -2 ?‘ A2F‘ +55&‘ ?*:A(‘ +56415‘ -A5‘ : 4?5‘ 46‘-A5‘ 6'6-55&-A‘ :5&-*1C(‘ 2?‘ -4‘ 2665:-‘ -A5‘ $2 *5‘ 46‘-A5‘ :*115&:C(‘ 2&F‘ -A5‘ 15G* 21‘ D1':5?‘ 46‘ :4 E E4F'-'5? 9‘ A5?5‘ 21G5‘ 5?-'E2-5?(‘ A4@5$51(‘ 215‘ ?:21:5 C‘ 15:4&:' 2+ 5‘ @'-A‘ -A5‘ D4D* 21‘ F'?:4&-5&-‘ 2-‘ -A5‘ E52G15&5??‘ 46‘ -A5‘ 15B -*1&?‘ 4+-2'&5F‘ 614E‘ -A5‘ 5@‘ 41 F(‘ 41‘ @'-A‘ -A5‘ 2??51-'4&‘ 46‘ 51&2 F5L(‘ 46‘-A5‘ ?2E5‘ F2-5‘ @'-A‘ V*&'B G20?‘ 156515&:5(‘ -A2-‘ R‘ ?4‘ '-- 5‘ G4 F‘ A2F‘ +55&‘ +14*GA-‘ A4E5‘ 2?‘ -4‘ 12'?5‘ 2‘ G5&512 ‘ +5 '56‘ -A2-‘ -A515‘ @2?‘ ?:21:5 C‘ 2&C‘ '&‘ -A5‘ '? 2&F K‘6‘ A'?‘ '?‘ ?-' ‘ 6*1-A51‘ :4&6'1E5F‘ +C‘ -A5‘ 615M*5&-‘ 15D15?5&-2-'4&?‘ 46‘ :4&B -5ED4121C‘ @1'-51?(‘ -A2-‘ -A5‘ 5JD5&?5?‘ 46‘-A5‘ :4 4B &'5?‘ :4&?'F512+ C‘ 5J:55F5F‘ -A5‘ D146'-?‘ ℕ‘ 2&F‘ E2C‘ 2:B :4*&-‘ 641‘ -A5‘ $51C‘ 'E'-5F‘ ?:2 5‘ 4&‘ @A':A‘ -A5‘ D2&B '?A‘ G4$51&E5&-(‘ 2-‘ &4‘ -'E5‘ + '&F‘-4‘ '-?‘ 4@&'&-515?-?(‘ D*1?*5F‘ '-?‘ ?:A5E5?‘ 46‘ F'?:4$51C(‘ 2?‘ :4ED215F‘ @'-A‘ '-?‘ 41-*G*5?5‘ &5'GA+4*1?(‘ @A4‘ 64 4@5F(‘ *D‘ -A5'1?‘ @'-A‘ 2‘ E2G&'6':5&-‘ 2DD212-*?‘ 46‘6 55-?‘ 2&F‘ 21E'5?‘ -A2-‘ :4* F‘ A2$5‘ +55&‘ ?*DD41-5F‘ 4& C‘ +C‘ -A5‘ -55E'&G‘ -152?*15?‘ 46‘-A5‘ &F'5?U

]‘ 9 #"$‘ $ ‘-‘(2@ ?‘$ $#‘ G$‘#‘ ?‘ " /‘& &>‘G?#&?‘& # /‘ ‘#‘#‘'$ ‘#‘2(5)‘G? ‘ #‘" $/ $ >‘ D‘#‘& L , &‘ *‘ ?‘#+- $#‘* +‘ ?‘+# ‘ *‘6# -$ # $‘ =‘ + &#‘?$‘"#' ‘#‘ $#'‘ '$ ‘$‘& +-$ /‘G# ?‘ #' ‘ * ‘ ' $‘/#** ‘>$ ‘$ /‘ ?‘>$‘?‘$ #" ‘* ‘?‘& +L + & + ‘ *‘#‘/ - &#$# ‘ #‘- &# >‘?‘ $+‘G# ?‘ ?$‘‘ # /#&$ /‘ 0>‘ 9 #"$‘ +

/‘ $‘ &$/‘ +‘'#‘ ‘ HH.‘ ?‘'$ ‘ *‘#'‘ G$‘ ‘ +$ #$ >‘$** & /‘#‘?‘ /#& ' >‘ *‘?‘" $‘+# ‘ *‘ #$ /‘9$&$ &$ X‘ $/K‘ > ‘ $ #& ‘ ‘&$-‘&JJJ# *‘ ?‘ #+$ ‘#‘?‘ J ‘ #‘G# ‘0‘ #& /‘$-- >‘ >‘ ‘ ?‘- #/‘$ & / ‘ ‘ '$ =‘ /(‘$/+# # $# ‘2@EF‘ ?‘ - $# ‘ /‘?#+‘G ‘& L /& /‘ $‘*$‘+ ‘ J #'‘ $/‘ **#&# ‘-$ ‘ ?‘ > =

&2-'4&?' 46' A1'?-5&F4E(' ?*GG5?-5F' 2' D 2*?'+ 5' E 5B F'* E' 641' -A5' 12D'F' :4E E*&':2-'4&' 46' -A5' F'?41F51(' 2&F' -A'?' -A541C' 46' '-?' 41'G'&' 2&F' -12&?E'??'4&' G2'&B '&G' :15F'-' @'-A' -'E65(' @A':A' E2F5' '-' E415' F'66':* -' -4' +5' 156*-5F(' A2?' D2??5F' @'-A' '-- 5' 5J2E'&2-'4&' 614E' -A5' E4*-A' 46'4&5' A'?-41'2&' -4' 2&4-A51' -4' -A5' D15?5&-' F2C

A5' 5J-15E5 C' +1'56' '&-51$2' @A':A' 5 2D?5F' +5B -@55&' -A5' 15-*1&' 46' 4 *E+*?' 2&F' -A5' ?'E* -2&54*?' 2DD5212&:5' 46'-A5' F'?41F51' 2-' -A5' E4?-' F'?-2&-' D4'&-?' 46' *14D5(' 4&G' ?'&:5' ?*GG5?-5F' 2' 152?4&2+ 5' F'?-1*?-' 46' -A5' :4115:-&5??' 46' -A5' ACD4-A5?'?' ℕ 2&F' 2&' E 5B 1':2&(' &2-*12 C' F5?'14*?' 46'15 '5$'&G' A'?' 4@&' :4*&-1C' 614E' ?4' E5 2&:A4 C' 2' 15D142:A(' E2C' 655' ?2-'?62:-'4&' -A2-' -A5' E415' ?521:A'&G' 2&F' ,*F':'4*?' :1'-':'?E(' 46' 4*1' 4@&' F2C' A2?' 2-' 5&G-A' 5?-2+ '?A5F' +5C4&F' 2' F4*+-' -A2-' -A5' F'?52?5(' 621' 614E' 41'G'&2-'&G' '&' -A5' 5@' 41 F(' @2?' &5$51' H&4@&' -A515' -' ' '&-14F*:5F' +C' *14D52&?9

1' ?'& # ' $/ ' #'-$ L #& $ >' * ' '$' $ ' G D' # ' /' ' ' ' '23F4<'#'G?#&?' ?'$? '?$'$ +0 /'$' ?' $ >' #& ' *' ?'/# $ ' *'$ >' $? # >'$ /'/# & /' ? #'#+L - ' G# ?' " $' # " #>' $ /' ! /"+ ' ?'* G# "' - #L # ' +$>' 0'& #/ /'$' L $0#? /'0>' ?#' $&? ' 2' ?$' #?' +0 ' '?#' ' #' ?#'& -# ' $ $#' ' $ /' & - / &' $ /'#' $ >'G$>' '?' J# &' *' &?

$'/# $ '#' ?' G' 7 /' ' + '$//' ?$'$' J$+# $# ' *' ?' #"# $' / & + '- 0L #?/'0>' '$'$ '#&'?'/$' *' ' ?# ⇩'G D'* >'& L *# +' ?#' $ + ' F' ?$' $+ "' ?'* , ' #& ' *' ?'/# $ '/ # "' ?' G >=' *#' '> $ '#+ + /#$ >'* G# "' ?'/#& ' >' *' + #&$' ? ' #' '$' # " '# #+$# ' *'# ' ?$'# "' 0 '0 "?'* +' ?$' & ><'0 ' '?'& $>'$' #+#* +' / #'$# ' *'#'* +' + ' ? ' & ' " $ >' $ & ' 4' ?$' ?' /# /

A2-5$51' +5' -A5' 2E4*&-' 46' DAC?':2 ' G44F' 41' 5$' '
'E E5F'2-5 C' 15?* -'&G' -4' D2'&' 614E' A51' &5@' F'?:4B
$51'5?(-A5'1' E412 ' :4&?5M*5&:5?' @515' '&5?-'E2+ 5 '
A5' 2&:'5&-' 'E'-?' 46' A*E2&' -A4*GA-' 2&F' 2:-'4&'
@515' 4$51 52D5FN -A5' $5' ' @A':A' A2F' :4$515F' -A5'
?5:15-?' 46' -A5' F55D' 641' ?4' E2&C' :5&-*1'5?' @2?' 15B
E4$5F'N 2&4-A51' A5E'?DA515' @2?' -A14@&' 4D5&' 2&F

NG$'D G '$ /'&# & + $ #$ >'
/ & #0 /' - '# ' ' ? ' J- L
/# # ' *' ?$ ' : ' $ /' *'
& ' & /' ' ?$' ' 0 ' # L
/ & /' 0>' ?' -$ #$ / ' # '
?$ 'G$>'$' ' "$ >' -- /'
(' ?$' '$ # ' & +!. $ >'
$? ' $& '# ' J# & '# '$
'$ # >' *'& # '$' *$ '0$&D'
$' 2(54' $ /' ?' 0 "# # '" *'
2(5(' ? G# '" $' $-#/# >'$ /'
J ' *' /#** # ' - * & >' # L
& &# $0 ' G# ?' # ' #+ - $L
'0>' +0 '# ' 2(54
Z $ >' ?$'#' G$' ' # '$* '
?'& ' *' /# $ /'$ /' $L
0 $' #" ' ?$' ?'*# 'G D'
$- - $ /'||$** & # '" ' $& ' ?'
#"# ' *' ?' /# $ ' ' + #&$.'
$ /' ?# '- 0 # ? /'# '2@2) 'G$'
?'- / & # ' ' *'$ -$ #$ /'
0 '$'* #"
' ' *' ' $ >' '
?' $ /' " ' #$'
$ 0 $' - * ' *' 8 D'$'
$ $+$ &$' #&# '" ? ' >+L
- + ' *' ?' /# $ '# ' ?' + '
, #' &$' +$ 'G# ' '
$' & ' ?# ' + &?=' J /' , L
'#*' G '&$' >' ' ?'" L
' *' ?' /$ ' ?'@ ?' *'
- #'2(33'$0 '*#' '> $ '0 L
* ' ?' ' *' +0 ' '
?# '? G ' ' ! & ' ?'/$

$' $- & >-?$ ' ' ?' " /'
2' ?$' ?' $+ ' *' 0' + 0 '
8$ #& (" "#' ' ' ?'/# $ '0>'
$ > 'G$' '# ' ' # '$* '
?' &?' # '$ # '2(5(' '
?$' ?' - &#- # ' *' 8 D'
- * '$' $$+$ &$'G$' - L
+$ '$' ' &?' - * ?#-'
J# /' ? ' # '2@E3
' ' ?'*# ' *' ? ' 0! &L
'#' +$>'0 ' +$ D /' ?$'
? '#'0 ' '$? '- # ' '
?' &?# '$ # 'G?' #& '
?'/# $ '$' $ ' 6 '/ #' '
#'* +' 8$ ' ? "?' '"#0'# "'
#' ?' &? #&$' $- - $ # ' *'
+ 0 '8$ #& .' /' $#= > '#'
+$>'0 ' 0 ' /'*$'* +'& L
*# # "' ?#+ *' ?# '$ / ' '
' ' G ' ? ' $+ ' ? GL
"' ?$'#' # 'G$' ? ', # '
/ +# /' ' "$ /' ' ? '
& /' 0! & # ' ' ?# '/ '
' &# ' ?#'$? # >'* ' #+# L
"' ?'# / & # ' *' 8 D'$'
$ $+$ &$' 2@E3=' 6 ' + M'
?$' '*# +/' $' - $ #0 ' ' +'
?' $&& ' *' ?$' #' # >'
& + -# /' 0>' ' *' # '**#& '
/ ' ?$& '2@B5'# /'# '
?' #"? ?' ' + ' *' ?' ='
+$ $ #' /# ' $/ #/'2) 5'
?' $&& $&>' *' ?' =G # ('
&? ">'? G ' '+$>'G '0

2 +4*&F 5??5JD2&?'4& D14E'?5F -4 ?:'5&:5 614E -A5 '&6'&'-5 $21'5-'5? '& @A':A &2-*15 @2? 5JA'+'-5F '& -A5?5 *&5JD 415F 15G'4&? A5 ?*::5?? 46 -A5 D2.M &'21F? H'&F 5F 2 G5&514*? 5E* 2-'4& '& -A5'1 41-*B G*5?5 1'$2 ?(@A4 ?44& 26-51 2::4ED '?A5F -A5'1 4&G ?4*GA- D2??2G5 '&-4 -A5 &F'2& ?52?(2&F -A*?:4E.(D 5-5F -A5 G152- :'1: 5 46 E21'-'E5 F'?:4$51C 9 - @4* F ?55E 2? '6 14$'F5&:5 A2F D4?-D4&5F -A'? G12&F 5$5&-(*&-' -A5 D4??5??'4& 46 E51':2(@'-A '-? ?-415? 46 D15:'4*? E5-2 ?(E'GA- ?*DD C ?*:A E2B -51'2 ? 641 2 :4E E51:5 @'-A -A5 2?- 2? ?A4* F +'&F

/ 0 /* +$ "# $ $&? L # + ? $+ -$" G# ? ? /$ * /' G? ? - $D *' ; P $ $ $ # ? ## " ? & G '# 2@2F 6# / $ $ #' #/$/ / $ $+$ &$ - @@ . 7$'# " ?# ? G ' ? *$& * $ 0 $ 0 # " 8 D - * $ $ $+$ &$# 2(33 # /# & > # #+$ /0> ?# - L -# ? & 0 $ / / G = /#U # # $ C $> ? ! , $/ $"# $ - $ = $ +$ #& $ # $ # = $ 8 &$ +$" $& + $ / - * R - # $/ ; ' / + $- $ 0 $ #0L # ? &$ # $ $ + # -)) . G$ $ 0 $0>" $ & L -$ / ' $ > $ # ? # $ #' & > * "$ 0 L * ?# / $? # 2@3E ?# $ L # * /# & $ # > - $& ?#+$ $ $ $+$ &$ # ? # $ # * 8 D # & + # + 0 * ? /$ * $ > C $ + $> 0 $//L / # / / ?$ #& #

?$ G? + $ + & + - & # #& & / 0 * / *$ * + - & # " ? /$ * ? &# # $ # " ? - L # / G? $ 0 $ *# / ? 8 D &?$# $ $ $+$ &$ #0 # ? 6# - ' + # - 2)E .

$ > C -# #* G $/ +# ? " # * ? /$ + /# - $ $ & * ? G? , # * ? + #&$ #"# * ? ' $ /# $ $ $?# , # # / +# / , # $ & & #' > ? "? + +$ # > 0> ? $&& + $ / '#/ & * + ? & ? $/ G# - 0$0 > ?# D ? +$ G ? + &? /# L & #

1 ?# ' && /# 2(5) : $ & / 8$+$ / 0 # " ? $- * 8 / 6 - ' FE ?* ?$ > $ $ / $&?# " $ #& # ? ? * G# " $> 2(53 / 6# / " $ + ### - - 2E(A 2E5

-4G5-A51 -A5 E 4?- F'?-2&- M*21-51? 46 -A5 G 4+5 A5 'E D15??'4& E 2F5 4& -A5 5& 'GA-5&5F E '&F?' 46 -A2- F2C '?' 5$'&:5F +C -A5 -4&5 46 G12-'-*F5 2&F 5J* -2B -'4& '& @A':A -A5C '&F* G5 2- +5'&G D51E'--5F -4 @'-&5??' -A5 :4&?*EE2-'4& 46 -A5?5 G 41'4*?' 5$5&-?(@A':A -A5'1 62-A51?' A2F ?4 4&G(+*- '& $2'&(F5?'15F -4 ?55 9

A5 F'?:4$51'5?' 46 4 *E+*?' 4::*115F E 4?- 4DD41 9 -*&5 C 641 -A5 D2&'?A &2-'4&(2- -A5 E 4E 5&- @A5& '- @2?' 15 52?5F 614E -A5 -*E* -*4*?' ?-1*GG 5 '& @A':A '- A2F +55& 5&G2G5F 641 ?4 E 2&C C521?' @'-A -A5 4? 5E?' A5 ?5$515 ?:A44 '&G 46 -A5?5 @21?' A2F D15D215F '- 641 5&-51'&G 4& 2 +4 F51 -A52-15 46 2:-'4&(@A4?5 ?-'11'&G 2&F 14E2&-':' D51' ?' 12'?5F ?-' A'GA51 -A5 :A'$2 14*?' ?D'1'- 46 -A5 D54D 5 A5 4D512-'4& 46 -A'?' ?D'1'- @2?' ?A4@&' '& -A5 2 2:1'-C @'-A @A':A D1'$2-5 2F$5&-*151?' 5E+21H5F '& 5JD5B F'-'4&?' -4 -A5 5@' 41 F(*&F51 :4$51 46 -A5 G5&512 ':5&?5(F*1'&G -A5 2?- -@4 C521?' 46 -A'?' :5&-*1C A5'1 5661-?(:4E+'&5F @'-A -A4?5 46 4 *E+*?(5JB -5&F5F -A5 12&G5 46 F'?:4$51C 614E '-?' 41'G'&2 'E'-?(-@5&-C.64*1 F5G155?' &41-A 2-'-*F5(-4 D14+2+ C E415 -A2& 6'6-55& ?4*-A(:4ED15A5&F'&G ?4E5 46 -A5 E4?- 'ED41-2&- -511'-41'5?'&' -A5 5?-51& A5E'?DA515 5B 6415 -A5 5&F 46 < (-A5 D1'&:'D2 G14*D?' 46 -A5 5?- &F'2 '? 2&F?' A2F +55& $'?'-5F(2&F -A5 @A4 5 5J-5&- 46 -A5 ?4*-A51& :4&-'&5&- :42?-5F(614E -A5 2C 46 4&F*12?' -4 2D5 - *G*?-'&5 &5 2FB $5&-*14*?' E21'&51('&F55F(&2E5F 5D5(D5&5-12-5F(

I $+ " ? $ > - -# $ + -232

=

?5$512 F5G155?? ?4*-A 46 -A'?(-4 2 D4'&- &4-152:A5F +C 2&C 4-A51 $4C2G51 641 -5& 41 -@5 $5 C521?? 2-51 G152-D21-46-A5H'&GF4E46 12L' @2?5E+12:5F '& -A'?? 5J-5&-(2&F -@4 ?*::5??'$5 2?-' '2& &2$'B G2-41?? 2&F5F 2&F -44H641E2 D4??5??'4& 46'-641 -A5 :14@& 46 2?-' 5(D15$'4*?? -4 '-?? 15D*-5F F'?:4$51C +C -A5 41-*G*5?5 2+12 ℕ9 2 -A4*GA -A5 : 2'E?-4 '- @515 ?*+?5M*5&- C 15 '&M*'?A5F +C -A5 D2&'?A G4$51&E5&-(:4&641E2+ C -4 -A5 62E4*?? '&5 46 F5B E21:2-'4& 5?-2+ '?A5F +C -A5 -152-C 46 41F5?! 2? -

A' 5 -A5 :4 4&'2 5ED'15 46 D2'& @2?-A*?? 5$51C F2C 5& 21G'&G(-A5 E2& -4 @A4E '- @2?? 2 F*5 @2? &5$51 D51E'--5F -4 H&4@ -A5 5J-5&- 41 -A5 $2 *5 46

1 $'$ &&# / :#$" + ### --23A FB A $0 $ - # ?/# L & ' > *$K# $-- $ B ?$' 0 / 0 / # & > ? > $ $ & # /0 ?0> = 0 $ /$> $? " &+ ?$' * + / ' > $&& $ #/ $ *? " $-?#&$' - # # *$K# Q+" +$ #'$? -$ # ? ' #" $&, $# # " ? +G# ? $0# ' >$" - $D *?# /# & ' > *$K# $ U + -'#/ #$ $ # G$ > & ' # 0 & $ > * ? $'#"$L # /#$ $** /# " $ - - - $& * $D# " # -- # $ / G$ %V ? $- / $'$ + ### 24 . ? / +$- *? # & > # / / G? ? * +#" $ & / #" 0 # " # G >= G / " $ * # - - "#L / ?$? G? * ? '$ $& G & +- ? / / *$? " #/ *? -$ ## # $?# G / ?0> ? G " ' + G?#&6 # G# 0 + +0 / G$ + ' / 4)E $" G *? ? $- / : / ? -$ # ?& +$/ + ? G $ *# *? # # " ? - L # *? ? " 0> - L -$ $ # * $0 # ?# " $ & L > ? ? J +# > $L '$ + ###' -'45 . # ' $ > / $ / ? G # &$+ *# $ > $/ +# ? - L # > & & $/ + $L + G# ?? ? $ ##$ $" G / > ?$' '# & / / ? * # " M$ # ' G *? ?= $ - + > -* $L K# ? " $" $ L G# " ' $ / " +$>?$' 0 $/ - / G?#&?? G / +0 $& $ > ? G?

'- 5 F'5F '& -A5 :4&$':-'4& '& @A':A(A5 '$5F(-A2- -A5 2&F A5 A2F 152:A5F @2? -A5 4&G.?4*GA- &F'5? *- '- @2? 2 :4*&-1C 621 1':A51 -A2& -A5 &F'5?N 2&F A2F A5 4& M*'--'&G *+2 ?-1*:H '&-4 2 @5?-51 C '&?-52F 46 ?4*-A51 C F'15:-'4&('- @4* F A2$5 :211'5F A'E '&-4 -A5 $51C F5D-A? 46 -A5 G4 F5& 15G'4&? @A4?5 5J'?-5&:5 A5 A2F ?4 4&G 2&F $2'& C D15F':-5F ?' - @2?(A5 (4& C 4D5&5F -A5 G2-5?(-4 *?5 A'? 4@& 2&G*2G5(641 4-A51? E 415 641-*&2-5 -A2& A'E ?5 6N 2&F +5641 5 A5 M*'--5F '?D2&'4 2 641 -A5 2?- -'E 5(-A5 C4*&G 2F$5&-*151 211'$5F -A515(@A4 @2? F5?-'&5F +C -A5 :4&M*5?- 46 5J':4 -4 152 'L5 2 -A5 E2G&'6':5&- $'?'4&?(@A':A A2F +55& F51'F5F 4& C 2? $'?'4&? '& -A5 '65-'E5 46 4 * E+*?

> G?#&?-$ /' / ' ? ' $ $' + ' G# # '' ' ? -' ? ' $+ ' *' $K#' # ' ? ' 0 ' $ =' " ' 0> # '' ? ' -$ L !# ' +$- ! J /# ''* +' $ $' # # ' # ' ' ? / /' $" ' ' ? ' ?' ' ? ' " $ ' #' ' *$? ' G ' ?$ ' ? >' & $#+ /' *' $ ' / ' ' ? ' ?' ' ? + ' ' 6# ' / ' -$ $' $ ' ! 0 D 52 .' $ #L + ## ' - ' BE)

A5 F'?:4$51C 46 -A5 5@ 41 F @2? 641-*&2-5 C 15?51$5F 641 2 D51'4F @A5& -A5 A*E2& 12:5 @2? ?*66':'5&- C 5& 'GA-5&5F -4 641 E ?4E5 :4&:5D-'4& 46 '-? 'ED41-2&:5 *+ ':-2--5&-'4& @2? D14ED- C 2&F 52G51 C F'15:-5F -4 -A'? E4E5& 4*? 5$5&-(?4 -A2- 65@ 62:-? @41-AC 46 &4-5(F*1'&G -A5 @A4 5 D14G15?? 46 F'?:4$51C 614 E '-? 521 '5?- 5D4:A(A2$5 5?:2D5F :4&-5ED4121C 15:41F 2&C 46 -A5?5 &4-':5? A2$5('&F55F(D51'?A5F -A14*GA &5G 5:-('& -A5 $21'4*? 15B D4?'-41'5? '& @A':A -A5C @515 ?:2--515F A5 15?521:A5? 46 2.' $2115-5 A2$5 15?:*5F -&2&C(2&F @' ('- '? -4 +5 A4D5F(E2&C E415 614 E -A5'1 D14G15?? -4 4+ '$'4& A5 -@4 6'1?- $4 * E5? 46 A'? :4EB D' 2-'4&(:4&-2'&'&G -A5 ,4*1&2 ? 2&F 5--51?,76 4 '*&+*?(-A5 :41B 15?D4&F5&:5 46 -A5 ?4$515'G&? @'-A A'E(2&F 2 $2?- M*2&-'-C 46

U

S

Z

7 A =8 :

:

<= S > <

-A5 2?- 64*1 C521? 46 4*1 &2112-'$5('& @A':A -A5 *&?5-- 5F ?-2-5 46 -A5 H'&GF4E 2&F -A5 D14G15?? 46 6415'G& F'?:4$51C 2DD5215F -4 F5E2&F -A5 @A4 5 2--5&-'4& 46 -A5 ?4$515'G&?(2 E4?- 'E D41-2&- 15$4 *-'4& @2? G4'&G 641@21F '& -A5 2662'1? 46 -2 C A5 F52-A 46 A21 5? @4* F?55E -4 A2$5 F'??4 $5F -A5 15 2-'4&? 15:5&- C 21'?5& +5-@55& -A2- :4*&-1C 2&F -A5 15?- 46 *14D5(2&F -4 A2$5 15?-415F '- -4 '-? 2&:'5&- '&F5D5&F5&:5 - E'GA-&2 -*12 C A2$5 +55& 5JD5:-5F -A2- 12&:5(*&F51 A51 &5@ E4&21:A(@A4 A2F 152:A5F 2 E2-*15 2G5(15&F515F ?-' E415 E2-*15 +C -A5 5??4&? A5 A2F 'E+'+5F '& -A5 ?:A44 46 2F$51?'-C(@4* F 655 -A5 64 C 46 15 $'$'&G 2E+'-'4*? ?:A5E5?(@A':A A2F :4?- ?4 F521 2&F 5&F5F ?4 F'?2?-14*? C -2 C(-44('- E'GA- A2$5 +55& D15?*E5F(2:512-5F 2&F ?-' + 55F'&G 2- 5$51C D415(E*?- A2$5 521&5F -A5 62-2 :4&?5M*5&:5 46 '&$4H'&G 6415'G& 2'F '& A51 F4E5?-':M*2115 ?(2&F 46 -A14@.

'&G 4D5& -A5 G2-5? -4 2 -4115&- ?*15 -4 ?@55D F4@& 61'5&F 2&F 645 '&F'?:1'E'&2-5 C '& '-? D14G15?? * - 5JD51'5&:5(2 2?P F'F &4- +1'&G @'?F4E(2&F D2?B ?'4& -1'*EDA5F 2? *?*2

4*'? Z 4& 2?:5&F'&G -A5 -A14&5 2??*E5F -A5 -'- 5? 46 *H5 46 '2& 2&F T'&G 46 2D 5?N -A*? *&5M*'$4:2 C 2&&4*&:'&G A'? '&-5&-'4& 46 2??51-'&G A'? : 2'E?(F51'$5F -A14*GA -A5 '?:4&-' 62E' C(-4 -A5 641E51(2&F -A14*GA -A5 &G5$'& FC&2?-C(-4 -A5 2--51 ?-2-5 '? 2?D'1'&G -5ED51 @2? ?-'E*B 2-5F 12-A51 -A2& ?2-'?6'5F +C -A5 E21-'2 15&4@& A5 A2F 2:M*'15F '& -A5 -2 '2& @21?N 2&F A5 @2? *1G5F 4& +C -A5 G152- +4FC 46 -A5 15&:A :A'$2 1C(@A4(F'?G*?-5F @'-A 2 '65 46 '&2:-'4&(4&G5F 641 2 6'5 F @A515 -A5C E'GA- @'& &5@ 2*15 ?(2&F '&F* G5 '& -A5 ,4C4*? ':5&?5 46 E' '-21C 2F$5&-*15

!&A2DD' C(-A5 :4*1- 46 12&:5 64*&F 152FC '&B ?-1*E5&-? 641 '-? D*1D4?5 '& -A5 D146 'G2-5 D4 '-':'2&? 46 -2 C A5 4E2& D4&-'66('& D21-':* 21(5JB 2&F51 @A4?5 :1'E'&2 2E+'-'4& 2??*E5? ?4E5B -A'&G 15?D5:-2+ 5 +C :4&-12?- @'-A -A5 4@ $':5? '& @A':A A5 @2? A2+'-*2 C ?-55D5F(@' '&G C 5&-A'EB ?5 6-4 2 E4&21:A @A4 :4* F ?4 5665:-*2 C ?51$5 A'? ?5 6'?A ?:A5E5? 46 +*' F'&G *D -A5 641-*&5? 46 A'? 62E' C A5 2&:'5&- 15D*+ ':' 46 5&':5(F5D21-'&G 614E A51 *?*2 ?2G2:'4*? D4 ':C(2&F C'5 F'&G -4 A51 A2-15F 46 4F4$':4 641L2(2&F -4 -A5 *?- 46 -511'B -41'2 2:M*'?'-'4&(:4&?5&-5F -4 *&'-5 A51 21E? @'-A -A4?5 46 12&:5 2G2'&?- ' 2&('&:4&?'F512-'4& 46 2 ?A215 /&4- -A5 '4&0? ?A215 46 -A5 ?D4' ? 46 $':-41C

415&:5 2&F E2&C 4-A51 '&651'41 D4@51?(@A5-A51 614E 6521 41 @52H&5??(41 -A5 ?A41-?'GA-5F A4D5 46 2??'?-2&:5 '& -A5'1 D5--C '&-51&2-'4&2 65*F?(:4&B ?5&-5F 5'-A51 -4 -A14@ -A5'1 @5'GA- '&-4 -A5 ?2E5 ?:2 5(41 -4 15E2'& &5*-51 9

2$'&G -A*? ?5:*15F A'E?5 6 614E E4 5?-2-'4&' '& -2 CN 4*'?' Z 5&-515F'&-4 &5G4-'2-'4&?@'-A ?*:A 4-A51 *14D52& D4@51? 2? @515 E4?- 'H5 C -4 '&B -516515@'-A A'? F5?'G&?' A5 ED5141 2J'E' '2&(@A4?5 15 2-'4&? @'-A ' 2& @4* F E4?- &2-*12 C A2$5 F5E2&F5F A'? '&-51D4?'-'4&(@2? F55D C 5&-2&GB 5F '& 2 @21 @'-A -A5 @'??' A5 &5*-12 '-C 46 D2'& @2? ?5:*15F +C -A5 -152-C 46 21:4*?'?(*B G*?- -A(<= S(@A':A ?5-- 5F 2 -A5 5J'?-'&G F'6651. 5AD5? @'-A -A2- :4*&-1CN 2&F 2 -152-C @'-A 2$4C '& -A5 64 4@'&G C521 G*212&-55F 2 6155 D2??2G5 -A14*GA '-? E4*&-2'& D2??5?-4 -A5 15&:A 21EC'&-4 -2 C 6

5D- <= 2$'&G(:4ED 5-5F -A5?5 2112&G5B E5&-?(4*'?' 4?- &4 -'E5' '& E*?-51'&G A'? 641:5?(@A':A(F5?:5&F'&G 'H5 2 -4115&- 4& -A5 62'1 D 2'&? 46 4E+21FC(5665:-5F -A5 :4&M*5?- 46 -A5 5&-'15 F*:AC '& '-- 5 E415 -A2& 2 641-&'GA-N 2&F 2 -A4*GA -A5 D1'L5 @2? ?&2-:A5F 641 2 E4E5&- 614E A'? G12?D(C5- 15&:A $2 4*1 2&F @'?? D51UC ?44& 15?-415F '- A5 E'?512+ 5 641L2(-A5 F*D5 46 21-? @A':A A5

I 8 #&&#$ /# # #$ /($- X + - #- $$- #$ + # #0 #' - F2(/ #, + ### --35) A (EE A 2B(@ A $ $ 6# / $ #- $ $ #- +$ #& $ 5$# - +$ # $ M$# + # -- + # - F)5 F)@ F))

A2F ?4 4&G D12:-'?5U @2? -12&?D41-5F '&-4 12&:59 @A515 A5 '&G515F 4*- -A5 15E2'&F51 46 A'? F2C?'& F4 56* :2D-'$'-C 5 A2F 6'1?- :2 5F -A5 (' '&-4 -2 C(' 2&F '- @2? 2 1'GA-54*? 15-1'+*-'4& @A':A E2F5 A'E -A5'1 521 '5?- $':-'E 9

C -A5 :4&M*5?- 46 ' 2&(' 12&:5 &4@ -44H A51 D 2:5 2E4&G -A5 -2 '2& D4@51? D15D4&F512-'&G @5'GA- @2? -A*? -A14@& '&-4 -A5 ?:2 5(' @A':A F'?B -*1+5F -A5 2&:'5&- D4 '-':2 +2 2&:5(' 2&F @A':A('6 -A5 D14,5:-? 4& 2D 5? ?A4* F +5 152 'L5F(' @4* F @A4 C 2&&'A' 2-5 '- A5?5 :4&?5M*5&:5?(' -4 @A':A -A5 -2 '2& ?-2-5? ?55E5F ?-12&G5 C '&?5&?'+ 5(' A2F 4&G +55& 6415?55& +C -A5 ?2G2:'4*? 5C5 46 51B F'&2&F -A5 2-A4 ':(' @A4 @2-:A5F -A5'E4$5E5&-? 46 A'? D4@516* &5'GA+4*1 @'-A -A5 F55D5?- 2&J'5-C 5 A2F 5&F52$4*15F(' +5641 5 -A5 '&$2?'4& 46 ' 2&(' -4 2@2H5& -A5 F'665 15&- G4$51&E5&-? '& -2 C -4 2M ?5&?5 46 -A5'1 F2&G51(' 2&F -4 ?-'1 -A5E *D -4 ?4E5 566':'5&- :4E+'&2-'4& 2G2'&?- '- 6 4-A A5 2&F -A5

I 8 #&&#$ /# #'2 /($#$ #0 #' --(F@E A F@F===== B= + # / $ + # &?$- J#J $- / + $ L & # + J#' A $&& #' #$ # --' FB A F5< / #L K 2@B3

9 #$ 6# / 6 $ / + #' #0 ### &' JJJ# $ > # $ G # $* * K$(& ' > *' ?# &$-# $ $> ?$? -$L # ? ' #" U'& / & = 1& $? #'! >' $? ' &? G$? #'! $ > *' $ & V - -# $ + -' &&J###.

? $+ $"$&# G # ? /# $ & *'G? #/ &'* + $ >' + ' /' ?#+' * + ? - # #&$'*$& # $ /' - ! /#& NG?#&? & / /' ? - #& *'?#' & >+ $G G# ?' / - L " ? #'& $ # # ' #? $ & ? *$ $'& , & *'G?#&?' ? - /#& /'# '$ $'$* # /' #': #& ? '* + +# # $' ? -$ # ?'& R' ? Q# "' *' $ & V' $> ? U' $* ?' ?$' /# /' G# ?' ? D *' # $ G# & + $ /' -' G# ?' > V -# &&'## . $? $? # >' *' &?$ /' =

-

M*55& A2F +5A5 F @'-A F'?M*'5-*F5 -A5 '&:152?'&G :411*D-'4&? 46 -A5 D2D2 :4*1-((2&F -A2- ?A2E5 5?? :*D'F'-C 2&F *?- 46 D4@51 @A':A E2F5 '- -A5 :4&$5B &'5&- -44 46 -A5 15&:A E4&21:A

C -A5'1 41F51?(21:' 2??4 F5 2 5G2(-A5 D2&'?A 2E+2??2F41(152F 2 5--51 614E A'? ?4$515'G&? '& -A5 D15?5&:5 46 A'? A4 '&5??(/<= S(7 :4E E5&-'&G 4& A'? ?:2&F2 4*? 'E E412 '-C(A'? '&$2?'4& 46 5:: 5?'2?-':2 1'GA-? 2DD51-2'&'&G -4 -A5 D2&'?A :14@&(A'? ?:A5E5? 46 ?5 6'?A 2GG12&F'L5E5&-(2&F 5?D5:'2 C A'? 2$4@5F D*1D4?5 46 -12&?6511'&G A'? ?4& 25?21 41G'2 614E 2 ?2:15F -4 2 ?5:* 21 F'G&'-C 2 :'1:*E?-2&:5 -A2- E*?- &5:5??21' C E2H5 A'E(614E -A5 E2&&51 '& @A':A '- @2? -4 +5 :4&F*:-5F(-A5 '&?-1*E5&- 46 4*'? #55

A'? *&?2$4*1C15+*H5(@A':A D14+2+ C 4?- &4-A'&G 46 '-? D*&G5&:C 614E -A5 -4&5 '& @A':A '- @2? F5 'B $515F(?4 '&:5&?5F -A5 D4D5 -A2- A5 2--5ED-5F -4 ?5'L5 -A5 D2D51 2&F -521 '- '& D'5:5?(G'$'&G $5&- 2- -A5 ?2E5 -'E5 -4 -A5 E4?- '&F5:5&- 15D142:A5? 2G2'&?- -A5 E'&'?-51 2&F A'? ?4$515'G&? 21:' 2??4 :44 C @2'-5F -' -A5 ?-41E A2F ?*+?'F5F(2&F -A5&

651? -A'? 15E21H2+5 D15F':-'4&(@A':A -'E5 ?4 6* C $51'6'5F(-4 641L2(4& A'? M*'--'&G A'? :2D'B -2 / '?-4'15 F5 5&'?5(-4E ''' D ; N ;&F 5F7 21-C1"? 5--51(A4@5$51('? F2-5F ?4E5 E4&-A? D15$'4*? C -4 -A2- 5$5&-

I # H * ? " / *L *#& * ? - - # ? $**$# * ? /#' & * + ? * $

P $ * $ & - +# /' ? &$ /# $ /' $ $ "#$? / &?> *: $ & # $ -?# B G# ?' $ * FE EEE #' $ /' $' & #/ $0 * * & - ?#+'# ?#' * $"## - # $"$# ? ? - # & * +$" $ 8 #&&#$ /# # /($ #$' + #' #0 #' - ' FE) A # + /#' 6# / $ $# + J' - F)@

15D '5F * &F2 * &-5F C(I A2-' A5' A2F' * --515F' &4' E415' -A2 *' +5:2E5' 2' 4C2' ?*+,5:-' 46' 2?-' 5N' -A2-' A5' ?A4* F' &5$51' ?A1'&H' 614E' F5: 21'&G' 6155 C' @A2-' A'?' ?4$515'G&?' :4E E2&F5F(' 41' @A2-' A5' :4&:5'$5F' -4' +5' 641' -A5' G44F' 46' A1'?-5&F4EN 2&F' '6' A'?' A4 '&5??' @"515' F'?D 52?5F' @'-A' '-(' A5' :4* F' F'?E'??' A'E' 614E' A'?' :4*1-(' @A515' A5' @2?' :4&$'&:5F(' '&F55F(' A'?' 15?'F5&:5' :4* F' +5' &4' 4&G51' *?56* K9

51F'&2&F' A2F' &4' +5--51' 641-*&5' 2-' 5&':5(' @A515' A'?' &5G4-'2-'4&?' @515' :4&F*:-5F' +C' 415&L4' *215L' F5' 2' 5G2(' 2&' 2F14'-' F'D 4E2-'?-(' +14-A51' 46' 21:'.' 2??4 "," A5?5' &5G4-'2-'4&?' @515' 15?*E5F' 26-51' -A5' 4::*D2-'4&' 46' ' 2&' +C' -A5' 15&:A(' @A5&' -A5' E'&'?B -51' 2$2' 5F' A'E?5 6' 46'-A5',52 4*?C' 4::2?'4&5F' +C' -A2-' 5$5&-' -4' 5J:'-5' 2' F5-51E'&5F' 15?'?-2&:5(' -4' -A5' D14B D4?5F' 2GG15??'4&' 4&' 2D 5?' *-' -A5' 15D*+ ':' @2?' --64' ?415 C' D15??5F' +C' -A5' *1H'?A' @21(' @A':A' 641L2(' '&' -A5' A4D5' 46':152-'&G' 2' F'$51?'4&' '&' A'?' 4@&' 62B $4*1(' A2F' +14*GA-' 4&' A'?' :4*&-1C(' -4' 2 4@' 5'?*15' 641' 4-A51' 4D512-'4&?N &41' F'F' -A5' D2&'?A' :4*1-

' V*1'-2('?-(F5 51&2&F4 5' 2-4':4(-4E' '' '+' ''' :2D' JJJ'''

21:' 2??4 F5 2' 5G2 ?55E?' -4 A2$5 D4??5??5F' '-- 5 46 -A5 :4*1-C 2&F' D4 '-':' 2FF15??' 46 2 F'D 4E2-'?-' &' 2' ?*+?5M*5&-' 2*F'5&:5 @A':A -A5 D4D5 G2$5 A'E(-4G5-A51@'-A 2' ?D5:'2'5EB +2??C 614E' 2?-' 5(A'?' + *&-' 5JB D4?-* 2-'4& ?4 E*:A 5J2?D512-5F' A'?' A4 '&5??(-A2-' -A5 2--51' A'&-B 5F' '-' @4* F' &4-' :4?-' A'E' E*:A -4 A2$5 A'E' -A14@& '&-4 -A5 '+51' A5' +4 F' +521'&G 46-A5 2?-' '2&(A4@5$51(2DD521?' -4 A2$5 A2F' '-? 5665:-(?'&:5@5 6'&F' -A5 D4D5 ?44& 26-51' 15$4H'&G 2& 4665&?'$5 5:: 5?'2?-':2' D14$'?'4& A5' A2F' E2F5 '& D2'&(-2H'&G 4::2?'4& 2-' -A5 ?2E5 -'E5 -4 5* 4G'L5 -A5 :A212:-51' 46' -A5 2-A4 ':' ?4$515'G&?' '& 6* ' :4&B ?'?-41C' +'F' '+' ''' :2D' JJJ''' JJJC

' '# / '?$' +$/' ?#'&$'$L # ' ?' 0! &' *' *'?#' /#$L " ' ; # & $" $' ' $' 2', # &' 4' /#$' ((

?*::55F 2&C +5--51 2- -A'? :1'?'? @'-A -A5 ED5141
2J'E' '2&(@A4?5 E2G&'6':5&- D15-5&?'4&? @515 1'B
F':* 4*? C :4&-12?-5F @'-A A'? 'E'-5F 2*-A41'-C 2&F
?-' E415 'E'-5F 15$5&*5?(?4 ?:2&-C('&F55F(2? -4
G'$5 A'E -A5 :4&-5ED-*4*? 5D'-A5- 2E4&G.-A5 -2B
'2&? 46 ' & 41 -A5 4&5C 5?? 5 A2F
:4&:5'$5F A'E?5 6('&F55F(G152- C '&,*15F(+/ "A 4&
-A5 ?:415 46 A'? 'ED51'2 1'GA-? 2&F A'? :4&&5J'4&
@'-A 641L2(+C -A5 :4&M*5?- 46 ' 2& N +*-(@'-A -A5
5$'-C 2&F :*D'F'-C 5??5&-'2 -4 A'? :A212:-51(A5 ?*6B
6515F A'E?5 6(&4-@'-A?-2&F'&G -A5 15E4&?-12&:5? 46
-A5 D2&'?A :4*1-(-4 +5 +1'+5F '&-4 2 -1*:5 @'-A
T'&G 4*'?(@A':A'(G2$5 -A5 2--51 6* ?:4D5 641 A'?
E5F'-2-5F 5&-51D1'?5 4& 2D 5? 9

A*? F'?5E+2112??5F 46 -A5 E4?- 641E'F2+ 5 E52&?
46 2&&4C2&:5(-A5 15&:A E4&21:A @5&- +1'?H C 641B
@21F @'-A A'? D15D212-'4&?(-A5 4+,5:- 46 @A':A A5
F'F &4- 26'5:- -4 :4&:52 15F51':(-A5 *&641-*&2-5
T'&G 46 2D 5?(?2@' A'E?5 6 @'-A F'?E2C &4@ E5B
&2:5F @'-A -A5 4?? 46 5ED'15(515 A5 A2F A2F -'E5 -4
-2?-5 -A5 ?@55-? 46 '- 5 H&5@ &4- @A515 -4 -*1&
641 156*G5('& A'? F5?4 2-5 :4&F'-'4&(614E -A5 'EB
D5&F'&G ?-41E '? -152?*1C @2? F12'&5F(2&F A'?
H'&GF4E @2?-5F(+C -A5 2-5 @21 '? ?*+,5:-?(
2 -A4*GA 2--2:A5F -4 A'? D51?4&(@515 -44 62E' '21
@'-A 15$4 *-'4&? -4 ?-2H5 -A5'1 '$5? 41 641-*&5? 4&
-A5 :2?- '? :4*&-1CE5&(-A5 -2 '2&?(@515 '& -A5

\ 9 #$ 6# / 6 +$ = $ # $#/($#$ +
/ + #' #0 ### &$- JJJ' ### J#' --5 2E< / #$ 23FE
JJJ#J A $ 6# / : # A 8 #&&#$ /# # /($#$
+ ### -- 4B 445 4() A +#' #0'' -FBE

'&-515?-?' 46' A'?' 5&5 E C' 2&F' A'?' &5215?-' &5'GA+4*1(' -A5' ')4D5(' A2F' F12@&' 614 E' D51?4&2' D'M*5' E4-'$5?' 641' -A5' E4?-' F52F C' A4?-' '-C 9' 5' A2F' 2?' '-- 5' 15B '2&:5' 4&' -A5' T'&G' 46' D2'&(' A'?' &2-*12' 2 C' 2&F' H'&?E2&(' @A4(' A50@5' H&5@(' A2F' 2 @2C?' 15G21F5F' -A5' :14@&' 46' 2D 5?' 2?' A'?' 4@&' 1'GA-6*' '&A51'-2&:5' 5' 15?4 $5F(' -A5156415(' -4' 2DD C' 2-' 4&:5' -4' -A5' 15&:A' E4&21:A' 2&F' A5' 5&F52$4*15F' -4' D14D'-'2-5' A'E' +C' -A5' E4?-' A*E' '2-'&G' :4&:5??'4&?(> -A5' 46651' 46' 2&' 2&&*2' -1'+*-5(' 2&F' -A5' ?*115&F51' '&-4' A'?' A2&F?' 46' ?4E5' 46' -A5' D1'&:'D2' 641-15??5?' '&' -A5' H'&GF46&' '&F'&G' -A5?5' 2F$2&:5?' :4 F C' 15:5'$5F(' A5' '&$4H5F(' '&' -A5' 5J-15E'-C' 46' A'?' F'?-15??(' -A5' 2'F' 46' -A5' *1HB '?A' * -2&' 2,2L5-(' -A5' -51141' 46' A1'?-5&F4E(' 15B M*5?-'&G' ?*:A' ?*DD '5?' 46' -144D?' 2?' ?A4* F' 5&2+ 5' A'E' -4' E2H5' A52F' 2G2'&?-' -A5'1' :4E E4&' 645' A'?' F5?D512-5' ?-5D' D14F*:5F' &4' 4-A51' 15?* -' -A2&' -A2-' 46' 6*1&'?A'&G' -A5' 5&5E'5?' 46' -A5' *&A2DDC' D1'&:5' @'-A' 2' D 2*?'+ 5' G14*&F' 46'2::*?2-'4&' 2G2'&?-' A'E(' 46' @A':A' -A5C' F'F' &4-' 62'' -4' E2H5' G44F' *?5 6

A5' D2&'?A' G4$51&E5&-(' '&' -A5' E52&' -'E5(' E2F5' -A5' E4?-' $'$'F' 15E4&?-12&:5?' -A14*GA' '-?' 15?'F5&-

I' J$ / ' : '?$/' , L /' ?'?$ /' *' ?$ $'/$ "?L ' *' Q# "' / #&'* '?#' ' * $' "#$< 0 ' ?#' G$' $ $& #*#&'$' G?#&?' - #/' $ /' -$L $' $** &# ' $#D' ' /' ?' #"?' G$' ' 0' * L "#' '0>' ?'#+- $&$0 ' "#$' *' 8#$ ' #$ /# $- #' #0' JJ#J' &$-'### A 8 #&&#$ /# #' #$ /($#$' +'#' #0'#'

-' 'A'9 #$' 6# ' +'#' #0'###' &0JJ## ' 8 #&&#$ /# #' ' /($' +'#' #0' '--' FB@' FBB' A' 8#$ ' #$ / ' " '/# $- #' #0' JJ#J' &$-'### A 9 L #$' 6# ' / ' 6 $ / ' +'#' #0'###' &$-' J' A 'P '## 6# ' $" # 8 $'#' #0'#' -' :' A' $+' 6# # ' / ' : # ' +'###' -'443

:

E'&'?-51(41 2G5&-? 5JD15?? C 2::15F'-5F 641 -A5 D*1B D4?5(2G2'&?-(-A5 D14D4?5F 5JD5F'-'4& 46 4*'? Z - 5$5& @5&- ?4 621 2? -4 G*212&-55 -A5 62'-A6* F'?B :A21G5 46 -A5 -1'+*-5 D1466515F +C -A5 T'&G 46 2B D 5? 9 *- -A5 15:H 5?? 2E+'-'4& 46 -A5 15&:A E4&21:A(4$51 52D'&G -A5 +211'51? 46 D1*F5&:5(2&F '&F55F 46 :4E E4&?5&?5(F'?F2'&5F -AF 61*'-? 46 :4&B M*5?- @'-A4*- -A5 &2E5

51F'&2&F &4@ 64*&F A'E?5 6 2DD215&- C 15F*:5F -4 -A5 2 -51&2-'$5"46 2+2&F4&'&G -A5 D1'L5 2- 4&:5 -4 -A5 15&:A H'&G(41 46 E2H'&G +2-- 5 @'-A A'E '& F5B 65&:5 46 A'? 14C2 H'&?E2& A5 6'1?- 46 -A5?5 E52B ?*15?(@A':A @4* F +1'&G 2 15?- 5?? 2&F D4@516* 1'$2 4& -A5 +41F51? 46 A'? ':' '2& F4E'&'4&?(@2? &4- -4 +5 -A4*GA- 46 641 2 E4E5&-% -A5 2--51(@A':A D 5FG5F A'E 2 ?5:4&F -'E5 -4 -A5 ?*DD41- 46 D15-5&?'4&? A4?-' 5 -4 A'? 4@&(@2? ?:21:5 C E415 D2 2-2+ 5 -A'1F 5JD5F'5&- ?*GG5?-5F '-?5 6% -A5 D21-'-'4& 46 -A5 H'&GF4E(2? A'&-5F '& -A5 &5G4-'2B -'4&? @'-A A21 5? 6 +C @A':A E52&? -A5 D2B &'?A G4$51&E5&-('6 '- :4* F &4- 15?:*5 -A5 @A4 5 D1'L5 614E -A5 G12?D 46 4*'?(@4* F 2- 52?- F'B $'F5 '- @'-A A'E

&?-1*:-'4&? @515 2::41F'&G C G'$5& -4 12 2(-A5 E'&'?-51 2- -A5 :4*1- 46 21'?(-4 ?4*&F -A5 G4$51&B E5&- 4& -A'? A52F(+1'&G'&G '- 641@21F 2? A'? 4@& D1'$2-5 ?*GG5?-'4& 215 @2? -2H5& 2- -A5 ?2E5 -'E5 -4 ?5:*15 2 D21-C '& -A5 15&:A :4*&:' ? -4

I $ > - -# = $ '## '&?$-# ### *' ?# $ + #0 J#' - '&&J'### 6# >

-A5 '&-515?-? 4- 512'&2&2 0 E 5 ?*GG5?-'4&? 4- E 5 D2&'?A 5&$4C 15:5'$5F 2FF'-'4&2 @5'GA- 614E -A5 15D41- 46 2 :4&?'F512+ 5 21E2E5&- -A5& 5M*'DD'&G '& -A5 D41- 46 2 2G2 -? 4?-5&?'+ 5 D*1D4?5 @2? -4 :44D512-5 @'-A -A5 5&5-'2&? '& -A5 F5'65&:5 4-9 -A5'1 D4??5??'4&? '& -A5 5$2&- -? E2'& 4+,5M-(A4@5$51(@2? -4 :4$51 -A5 :42?-? 46 ':' C '& 2&C 5$5&- 614E -A5 15&:A(2&F -4 2'641F -A5 E52&? 641 D14ED- 2:-'4& 4& 2&C D4'&- @A515 :'1:*E?-2&:5? E'GA- 15M*'15 '- A5 6 55- :4&?'?-5F 6 2+4*- ?'J-C ?2' (21G5 2&F ?E2 (2&F :211'5F 641:5? 2E4*&-'&G -4 A41?5 2&F = 644-(D':H5F E5&(E2&C 46 -A5E F12@& 614&'^ -A5 A21FC 15G'4&? 46 -A5 41-A(@A':A A2F +55& -2J5F 52?- ?5$515 C '& -A5 441'?A @21? 6

A5 :4E E2&F 46 -A5 @A4 5 @2? 5&-1*?-5F -4 -A5 152- 2D-2'&(4&?2 $4 46 41F4$2(@A4(?'&:5 A'? 15-*1& A4E5(A2F 6* C ?*?-2'&5F -A5 A'GA 15D*-2-'4& @A':A A'? +1' '2&- E' '-21C -2 5&-? A2F 2:M*'15F 641 A'E 2+142F * E514*? $4 *&-551?(:4ED15A5&F'&G -A5 &4+ 5?- 46 -A5 C4*&G :A'$2 1C 46 D2'&(D15??5F 641@21F -4 ?51$5 *&F51 -A5 +2&&51 46 -A'? 2::4E.

&& /# "' 9 # $ /#L + # / +# ' '###
$ / & / ? '#& &?JJ###
* # $ + / # # / *' +0 #$:# #K#$ $
J $ / " ' *' $ # ' + '### #0 ' ' - 4F(A $
0> ? - +# *' ? &# >' :# $/# $: * F< / : =
+ "$" / ?#+ # #$ 2BEB A $ #$ $ 6# '
$ > 6# / 6 $ / #0 + '## #0 JJ'## &$- '## A
&J . +# '&$? P '## :# $:# + +
$+ 0 +$!$" / *' #' - FFB= A 9 # $ 6# / '
$ +$, #*Y# + & # ' 6 + + '#' #0 '#' &$- 22 A
- - &#$ (' (; (& 0$ &$ + '## > JJJ &$- '
+ $ # "' Q# "' /# $ / = &' J###

D '?A5F 2&F D4D* 21 :A'56-2'& E 4&G -A5E E 2C +5 D21-': * 21 C &4-':5F('5G4 F5 5&F4L2(?4& 46 -A5 12&F 21F'&2 (5F14 F5 2 2L(9 4&L2 4 'L2114(62-A51 46 -A5 :5 5+12-5F 2F$5&-*151 46 51*(2&F '5G4 F5 215F5?(@A4?5 D51?4&2 D14@5??2&F 652-? 46 5J-12$2G2&- F21'&G 6*1&'?A5F E 2&C 2& '&:15F'+ 5 5G5&F 641 :A14&': 5 2&F 14E2&:5 '-A -A'?G2 2&- 21E2E5&- -A5 152- 2D-2'& @5'GA5F 2&:A41 '& -A5 D41- 46 2 2G2(2C < (F5?'G&'&G -4 -4*:A 2- ':' C +5641 5 D14:55F'&G 2G2'&?- -A5 *1H? 6 & -A5 E52& @A' 5(-A5 &5G4-'2-'4&? +5-@55& 12&:5 2&F D2'& 15?D5:-'&G 2D 5? @515 +14*GA- -4 2 : 4?5 +C 2 -152-C 641 -A5 5M*2 D21-'-'4& 46 -A5 H'&GF4E +5-@55& -A5 -@4 D4@51?(12-'6'5F 2- 12&2F2(4$5EB +51 <<-A(< A'? 5J-1241F'&21C F4:*E5&-(26-51 5& 21G'&G 4& -A5 *&E J5F 5$' ? 6 4@'&G 614E @21(2&F -A5 4+ 'G2-'4& 4& 2 A1'?-'2&? -4 D15?51$5 '&$'4 2-5 -A5 + 5??5F D52:5 +5M*52-A5F -A5E +C -A5 2$'4*1(D14:55F? -4 ?-2-5 -A2- &4 4-A51 D1'&:5(?2$5 -A5 H'&G? 46 12&:5 2&F 12G4&(:2& D15-5&F -4 2 -'- 5 -4 -A5 -A14&5 46 2D 5?N 2&F 2? '&G 15F51':('-? D15?5&- 4::*D2&-(A2? ?55& 6'- -4 5&F2&G51 -A5 ?265-C 46 2 A1'?-5&F4E +C +1'&G'&G 4& '- '-? +'--515?- 5&5EC -A5 *1H?(-A5 :4&-12:-'&G D21-'5?('& 41F51 -4 15?:*5 '-

?# &$'$# * ? + '$#$ &$- $# # ? $ +>G$ /#+# #'#K ? $ /$// 0 #/ V ?$ G? + /? + / $ + '#? ?#"?/ +#- $D G$ = $// ? '#'' " <G?#&? /$ G$"'$&& /# " $ = B+ G? $D /#*?'?$/ / $ K -$?G>' + $ G ?$U?'?$/ ?# ' ? $ /$// 0 #/ V ' + #'# #&'#J $ + '#? ?#"?/ +#- $D $ 6# /(-$" G$ = $// ? '#'' " <G?#&? /$ G$"'$&& /# " $ = B+ G? $D /#*?'?$/ + &$-'& J# A 8$ #0$>' + ## #0'J#J'&$-'#J

6'04'&' -A'?' 'E E'&5&-' D51' (' 2&F' D15?51$5' '&$'4 2-5' -A5'
+4&F' 46' D52:5(' 2G155' -4' -2H5' D4??5??'4&' 46' A'?' H'&GF4E'
2&F' F'$'F5' '-' +5-@55&' -A5E ' -' '?' -A5&' D14$'F5F' -A2-'
-A5' &41-A51&' D41-'4&(' :4ED15A5&F'&G' -A5' 5112' F5'
2$414' 2&F' +1*LL4(' +5' 2??'G&5F' -4' 12&:5(' @'-A' -A5'
-'- 5?' 46' T'&G' 46' 2D 5?' 2&F')51*?2 5E(' 2&F' -A5'?4*-AB
51&(' :4&?'?-'&G' 46' D* '2' 2&F' 2 2+1'2(' @'-A' -A5' -'- 5'
46' *H5' 46'-A4?5' D14$'&:5?(' -4' D2'&' A5') (& 2&'
'ED41-2&-' F*-C' 5$'5F' 4&' -A5'6 4:H?' 46' -A5' 2D'-2&2-5('
@2?' -4' +5' :4 5:-5F' +C' -A5' 466':51?' 46' -A5' D2&'?A' G4B
$51&E5&-(' 2&F' F'$'F5F' 5M*2 C' @'-A' 12&:5' 2?- C('
2&C' '&5M*2 '-C' +5-@55&' -A5' 15?D5:-'$5' -511'-41'5?' @2?'
-4' +5' ?4' 2F,*?-5F(' -A2-' -A5' 15$5&*5?' 2::1*'&G' -4' 52:A'
46' -A5' D21-'5?' ?A4* F' +5' D15:'?5 C' 5M*2 ' A5' -152-C'
@2?' -4' +5' H5D-' D1464*&F C' ?5:15-(' *&-' ' D15D212-'4&?'
@515' :4ED 5-5F' 641' -+5' ?'E* -2&54*?' 4::*D2-'4&' 46'
-A5' F5$4-5F' -511'-41C' +C' -A5' :4E+'&5F' D4@51? 9'
*:A @515' -A5' -51E?' 46' -A'?' :5 5+12-5F' :4ED2:-('
+C' @A':A' -@4' *14D52&' D4-5&-2-5?' :44 C' :21$5F' 4*-'
2&F' F'$'F5F' +5-@55&' -A5E' -A5' 5&-'15' F4E'&'4&?' 46'
2' -A'1F(' @A4' A2F' G'$5&' &4' :2*?5' 641' *E+12G5(' 2&F'
@'-A' @A4E' -A5C' @515' +4-A' 2-' -A2-' -'E5' '&' D5165:-'
D52:5' 2&F' 2E'-C ' 'E' 21' '&?-2&:5?' 46' D4 '-':2 ' 14+B
+51C' /-4' :2 ' '-' +C' -A5' :421?5' &2E5' '-' E51'-?' A2$5'
4::*115F' '&' 2-51' -'E5?N +*-' &5$51' 4&5' 64*&F5F' 4&'
E415' 6 'E?C' D15-5J-?(' 41' $5' 5F' *&F51' 2' E415' F5-5?-2B
+5' E2?H' 46' ACD4:1'?C ' 9 A5' D1'&:'D2 ' 4F'*E' 46' -A5'
-12&?2:-'4&' A2?' 2--2:A5F' -4' 51F'&2&F(' 2?' -A5' H'&?.

I' ' ?' #"# $' $>' $- /' + ' -' #- +$#, '
+' ### ' --' ((@' ((B

E2&4 6-A5 *&641-*&2-5T'&G46 2D5? '? :4&B F*:-(A4@5$51(2FE'-?46?4E5D2 '2-41C:4&?'F512B -'4&?U-A2-:2&&4-+5:2'E5F641 4*'?

A5 12G4&5?5&2-'4&2@2C?15G21F5F-A5+5M*5?-4 6 51F'&2&F0?*&:5( )DA4&?4 ('&62$4*1 46A'?&2B -*12 (466?D1'&G2?2&*&@2112&-2+5 2&F' 5G2 2:- A5H'&GF4E46 2D5?A2F+55&@4&+C-A5'1 4@&G44F?@41F?(2&F2?? ?*:A@2?-A5 1'GA-6* '&A51'-2&:5 46-A5'1 4@&D1'&:5? 4-A'&G'+*- -A5F4E5?-':-14*+5? 46A'? F4E'&'4&? A2F D15$5&-5F)4A& 46 12G4&(4&-A5F5:52?5 46A'?+14-A51(614E 2??51-'&G A'?:2'E+C21E? '? ?4&(51F'&2&F-A5 2-A4 ':(A2F A'-A51-4 2:M*'5?:5F'&-A5 *?*1D2-'4& 46-A5+2?B -21F+12&:A 46A'? A4*?5 4& C614E ?'E'21 :2*?5? & -A5 2::5??'4& 46-A5 D15?5&- E4&21:A(A5 A2F E2F5 ?4E5 F5E4&?-12-'4&? 46 $'&F':2-'&G A'? D15B -5&?'4&? -4 2D5?(@A':A(A4@5$51(-A5 '&-5 'G5&:5 A5 15:5'$5F614E -A2-H'&GF4E'&F*:5F A'E -4 F5651 -4 2 E415 :4&$5&'5&-?52?4&=+*-'-@2? F56511'&G(&4-15 '&M*'?A'&G A'? D*1D4?5 &-A5 E52&-'E5(A5 :2156* C2$4'F5F 5&-51'&G '&-4 ?*:A 5&G2G5E5&-? 2? ?A4* F:4ED5 A'E -4 2 F'66515&- D4 ':C+C :4&&5:-B '&G A'? 4@&' '&-515?-? @'-A -A4?5 46 15F51':N 2&F @'-A -A'? $'5@(&4 F4*+-(15,5:-5F -A5 2 '2&:5(?-14&G C?4 ':'-5F +C -A5 2--51(46-A5 *H5 46 2B 2+1'2(A5'1 2DD215&- -4 -A5 52D4 '-2&:14@&(@'-A A'? -A'1F F2*GA-51(-A5 &62&-2 21'2 &F55F(-A'? F'?D4?'-'4& 46 51F'&2&F(?4 621 614E +5'&G F'??5E.

I $ '## &?$- ### *?# 6# >

+ 5F(@2? @5 *&F51?-44F +C -A5 :4*1-46 2D 5?(2? '? 2:H&4@ 5FG5F +C '-? 4@& A'?-41'2&? 9

- E 2C +5 -A4*GA- -A2- -A5 *&F'?-*1+5F ?*::5??'4& 46 64*1 D1'&:5? -4 -A5 -A14&5 46 2D 5?(52:A 46 @A4E A2F 15:5'$5F -A5 ?4 5E& 15:4G&'-'4& 46 -A5 D54D 5(E 'GA- A2$5 A52 5F 2&C F565:-? '& -A5'1 41'B G'&2 -'- 5(A4@5$51 G 21'&G - E 2C +5 15E21H5F(A4@5$51('& 5J-5&*2-'4& 46 +4-A -A5 15&:A 2&F D2&'?A :2'E?(-A2- -A5 D1'&:'D 5? 46 E4&21:A':2 ?*::5??'4& @515 +*- 'ED5165:- C ?5-- 5F '& -A2- F2C -A2- 42-A? 46 2 5G'2&:5 @515 -5&F515F -44 'GA- C +C -A5 52D4 '-2&? -4 :211C -A5 ?2E5 @5'GA- 2? '& 4-A51 &2-'4&? 2&F -A2- -A5 D15?:1'D-'$5 1'GA- F51'$5F 614E D4??5??'4&(&5:5??21' C '&F5-51E'&2-5(@2? G152- C @52H5&5F '& -A'? :2?5 +C -A5 :4ED212-'$5 C 65@ \U521?(&4- E415 -A2& 641-C(F*1'&G @A':A -A5 +2?-21F '&5 46 12G4& A2F 4::*D'5F -A5 -A14&5(> 2 D51'4F E*:A ?A41-51 -A2& -A2-(26-51 @A':A -A5 A4*?5 46 41H('& &G 2&F(2 65@ C521? D15$'4*?(A2F ?*:B :5??6* C :4&-5?-5F -A5 $2 'F'-C 46 -A5 2&:2?-1'2& -'- 5 - ?A4* F +5 2FF5F(-A2- 51F'&2&F0? $'5@? 2DD521 -4 A2$5 D5165:- C :4115?D4&F5F @'-A -A4?5 46 -A5 D2&'?A &2-'4& 2- 21G5 &4- 4&5 @1'-51 46 -A5 -'E5(@A4E A2$5 E5- @'-A('&-'E2-'&G -A5 ?'GA-5?- F4*+- 46 A'? -'- 5 -4 2D 5?(@A' 5 &4- 2 65@ '&?'?- 4& '- @'-A *&&5:5??21C 5EDA2?'? 6 - '?

I 8#$ #0 JJ#J &$- $/ -$ # & A# /# & # " ### A 9 # $ 6# + #$ #0 ### ? + #*$ # " / * ? &$- JJJ## # & ' #0 # * ? ? # -$ #& $? &L * $" $- $, #$ $ K / / K$ G? / - + # #0 ### &$- J## A J?$? 0! & A $ / ?

+ * -' 62'1' -4' ?-2-5(' A4@5$51(' -A2-' 6415'G&51?(' @A4' :4&B -5 E D 2-5F' -A5' -12&?2 : -'4&' @'-A' 2' E 415' ' E D21-'2 ' 5C5(' :4&F5 E &5F' '-' 2?' '&6 ' : -'&G' 2' F55D' ?-2'&' 4&' -A5' :A2B 12 : -51?' 46' +4-A' D4-5&-2-5?' &F55F(' ?4 E 5-A'&G' 'H5' 2&' 2DD15A5&?'4&' 46' -A'?(' '&' -A5' D21-'5?' -A5 E ?5 $5?(' E 2C' +5' '&65115F' 614 E' -A5'1' ?4 ' : '-* F5' -4' F5D15 : 2-5' D* + ' :' :5&?*15(' +C' E 2?H'&G' -A5'1' F5?'G&?' *&F51' 2' D15-5&F5F' L52 ' 641' 15 'G'4&

56415' -A5' :4&6515&: 5?' 15?D5 : -'&G' -A5' -152-C' @515' +14 * GA-' -2' 2' : 4?5(' -A5' D2&'?A' 21 E 2F2' *&F51' 4&?2 .' $4(' 26-51' 2' +1'56' F5-5&-'4&' 2-' ' : ' C(') * C' < -A(' < (' @A515' '-' @2?' 15'&641 : 5F' +C' ; ' 2FF'-'4&2 ' 15 : 1 * '-?(' @A4' A2F' +55&' ?51$'&G' 2?' E51 : 5&21'5?' '&' -2 C(' A5 F' '-?' :4 * 1?5' 641' -A5' 4152 ' A5' * 1H'?A' ?M * 2F14&(' C'&G' +56415' 2D4 '' F'' 4 E 2&'2(' @'-A4 * -' @2'-'&G' 4&?2 $40?' 2DD142 : A(' 12'?5F' -A5' ?'5G5' 2&F' 15-152-5F' D15 : 'D'-2-5 C' -4' 4&?-2&-'&4D 5 ' A5' D2&'?A' G5&5B 12 ' -A5&(' * &'-'&G' A'?' 641 : 5?' @'-A' -A5' 5&5-'2&?' ?-2B -'4&5F' 2-' 416 * (' D14 : 55F5F' 2-' 4&: 5' 2G2'&?-' -A5' 641B -'6'5F' D 2 : 5' 46' - ' 541G5' '&' 5DA2 4&'2(' @A' : A' -A5' * 1H?' A2F 2-5 C' @15?-5F' 614 E' -A5' 15D * + ' : 9

A5' -4@&' ?-44F' A'GA' 4&' 2' 14 : H' '&' 2&' ' E D15G&2+ 5' D4?'-'4&(' 2&F' @2?' G211'?4&5F' +C' 64 * 1' A * &F15F' * 1H?(' 2 ' $5-512&' ?4 F'51?(' D15D215F' -4' F'5' '&' '-?' F565&: 5 ' > ' A2$5' &4-' 144 E' 641' -A5' F5-2' ?' 46' -A'?' ?'5G5(' '&' @A' : A' +4-A' D21-'5?' F'?D 2C5F' *&+4 * &F5F' : 4 * 12G5' 2&F' 15?4 * 1 : 5?(' 2&F' @A' : A' @2?' D14-12 : -5F' &521 C' -@4

1' ' P '## : # $ ' + ' # ' -' 9 # $ ' 6# ' + # ' #0 # ' ' &$-' FFB A ? #&$ / ' 8 $ ' $-#= J#J '
$ '&$- #J < / ' &$ $ ' 2@3(A

'&4&-A? *&F51 2 -A5 D1'$2-'4&? 46 62 E '&5(2&F -A5 '&: 5E5&:'5? 46 2 :4 F 2&F ?-41E C @'&-51 9

- 5&G-A(@521C @'-A -A'? 62-2 D14:12?-'&2-'4&(4&?2 $4 2&F -A5 5&5-'2& FE '12 5?214 15?4 $5F 4& 2 ?'E * -2&54*? 2--2:H 4& ?5D212-5 M*21-51? 46 -A5 -4@& A5 12E D21-? A2F +55& 2 152FC ?A2H5& +C -A5 E '&'&G 4D512-'4&? 46 5F14 2$2114(@A4(.'& -A5 -2 '2& @21?(2:M*'15F ?*:A -511'+ 5 :5 5+1'-C '& -A'? F5D21-E 5&-(-' -A5& '-- 5 *&F51?-44F A5 5B &5-'2& :2&&4&(21G51 2&F +5--51 ?51$5F -A2& -A2- 46 -A5 D2&'21F?(A2F 4D5&5F 2 D12:-':2+ 5 +152:A '& -A5 @41H?(@A':A -A5 +5?'5G5F 15D2'15F @'-A ?*:A -5E D4121C F565&:5? 2? -A5C :4* F A5 ?'G&2 +5'&G G'$5& 2- -A5 2DD4'&-5F A4*1(-A5 -@4 21E '5? E2F5 2 F5?D512-5 2??2* - 4& F'66515&- M*21-51? 46 -A5 -4@&(*&F51 :4$51 46 2 E *1F514*? 6'15 46 21-' 51C A5 *1H? ?*DD41-5F -A5 2--2:H @'-A F2*&- 5?? 15B ?4 *-'4&(?-4DD'&G *D -A5 +152:A @'-A -A5 +4F'5? 46 -A5'1 F52F 2&F FC'&G :4E12F5?(2&F D4*1'&G F4@& $4 5C? 46 ?A4-(2114@?(+*1&'&G 4' 2&F ?* DA*1(2&F E '??' 5? 46 5$51C H'&F 4& -A5 A52F? 46 -A5 2??2' 2&-? *- -A5 F5?D512-5 5&51GC(2? @5 2? &*E +51? 46 -A5 2--51(D14$5F -44 ?-14&G 641 -A5E 4E5 641:5F -A5 +152:A(4-A51? ?:2 5F -A5 12E D21-?(2&F(26-51 2 ?A41- 2&F F52F C ?-1*GG 5 @'-A'& -A5 @2 ?(-A5 +12$5 G211'?4&(64*1.6'6-A? 46 @A4E @'-A -A5'1 :4E B E2&F51 A2F 62 5&(@515 4$51D4@515F(2&F -A5 $':B -41'4*? +2&&51? 46 -) 2G4 2&F - 21H @515 D 2&-.

I 'P '##:# # 0# - $ A ? / '8 $ $-'&'J#'

=

5F ?'F5 +C ?'F5 -1'*EDA2&-C 4& -A5 -4@51?( )2&
< < 9

A5 :2D-*15 46 -A'? D 2:5(2 -A4*GA 2::4ED '?A5F 2- :4&?'F512+ 5 4??(2&F 26-51 2 E4?- G2 2&- 15?'?-. 2&:5 +C 2 E515 A2&F6* 46 E5&(@2? 46 G152- ?51$':5 -4 -A5 5&5-'2& :2*?5 ?'&:5 '- @2? -A5 6'1?- :A5:H G'$5& -4 -A5 21E? 46 2,2L5-(@A4 A2F 6' :A5F 4&5 D 2:5 26-51 2&4-A51 6'04E -A5 15D*+ ':(E5&2:'&G '-? @A4 5 :4 4&'2 -511'-41C'& -A5 5$2&- A5 D14ED-B &5?? 2&F 566':'5&:C 46 T'&G 51F'&2&F0? ?*::4*1 -4 -A5 5&5-'2&? G2'&5F A'E A'GA 15D*-2-'4& -A14*GAB 4*- *14D5(2&F D15:'?5 C 46 -A5 H'&F @A':A A5 E4?- :4$5-5F(-A2- 46 +5'&G -A5 L52 4*? F565&F51 46 -A5 62'-A @A' 5 '- 641E5F 2 62$4*12+ 5 :4&-12?- -4 -A5 :4 F ?*D'&5&5?? 46 -A5 4-A51 D4@51? 46 A1'?-5&B F4E

A5 :2D-*15 46 - 541G5 15?-415F -4 5&':5 -A5 D4??5??'4& 46 5DA2 4&'2 2&F -A5 152- 2D-2'&(A2$'&G 2::4ED '?A5F -A'? 'ED41-2&- 4+,5:-(15-*1&5F '& -A5 +5G'&&'&G 46 -A5 64 4@'&G C521(< <(-4 ':' C 44& 26-51 A'? 211$2 -A515(2& 5E+2??C @2'-5F 4& A'E 614E -A5 5&5-'2& ?5&2-5(-4 2:H&4@B 5FG5 -A5'1 G12-56* ?5&?5 46 A'? ?51$':5?(@A':A -A5C -5?-'6'5F +C 5&14 '&G A'? &2E5 4& -A5 G4 F5& +44H 2? 2 &4+ 5E2& 46 5&':5(2&F +C 2 E2G&'6':5&- D15B ?5&- 46 D 2-5(:*1'4*? ?' H? 2&F $5 $5-?(2&F 2 ?-*F 46 +52*-'6* *1H'?A A41?5? 4&?2 $4 :4*1-54*? C 2:B :5D-5F -A5 D146'515F A4&4*1?(+*- F'?-1'+*-5F -A5

1= 'P '# 0# - A ? JJ''A +$/K 6# / 8 $-# $ &$-'J A'9 = &$-'&J'## '
$ 6# + '#' #0'#'' &$-

2 ' 1'GA-' /'6' A5' 5$51' D4??5??5F' 2&C7' -4' -A5' :,04@&' 46'
2D 5? 9

14E' -A5' E4E5&-' -A2-' -A5' 15&:A' 641:5?' A2F' F5B
?:5&F5F' '&-4' 4E+21FC(' -A5' 5C5?' 46' 2 ' -2 C' @515'
-*1&5F' @'-A' +152-A 5??' 5JD5:-2-'4&' 4& 4&?2 $4(' 2&F'
A'?' 21EC' '& ':' C' A5' +*?- '&G' D15D212-'4&?' 46'
-A5' 15&:A' E4&21:A' A2F' F'66*?5F' -A5' H&4@ 5FG5' 46'
A'?' F5?'G&?' -A14*GA4*-' *14D5' A4?5' 46' -A5' T'&G'
46' D2'&(' 4&' -A5' :4&-121C(' 15E2'&5F' 5&$5 4D5F' '&
D1464*&F' ?5:15:C' 5@' F4*+-5F' -A2-' 51F'&2&F'
@4* F' ?-5D' 641@21F' -4' ?A'5 F A'?' H'&?E2&' 614E' -A5'
'&$2?'4&' @A':A' E5&2:5F' A'E(' 2&F(' '-' E'GA-' +5(' A'?'
4@&' F4E'&'4&?' '&' ':' C' 2&F' -A5C' 44H5F' -4' -A5'
'E E5F'2-5',*&:-'4&' 46' 4&?2 $4' @'-A' T'&G' 15F51':('
'&' 41F51' -A2-' -A5'1' :4E+'&5F' ?-15&G-A' E'GA-' 4$51B
D4@51' -A5'5&5EC' +5641 5' A5'A2F'G2'&5F' 2'644-'&G''&' -A5'
H'&GF4E' 152-' @2?' -A5'1' 2?-4&'?AE5&-(' -A5&(' @ '5&'
-A5' ?:2 5?' F14DD5F' 614E' -A5'1' 5C5?(' 2&F' -A5C' +5A5 F'
-A5' E4$5E5&-?' 46' D2'&' '&' D5165:-' 2::41F2&:5'_@ A'
-A4?5' 46' C2&:5(' 2&F' F'15:-5F' -4' :1*?A' -A5'1' :4E E4&'
$':-'E' +5-@55&' -A5E' A5C' :4* F' ?:21:5 C' :15F'-('
?2C?' *':'21F'&'(' -A2-' 4*'?' Z ' :4* F' +5' ?4' + '&F'
Ú2?' -4' 15,5:-' -A5' D1466515F' $2??2 2G5' 2&F' ?*+?-2&-'2'
?4$515'G&-C' 46' 2D 5?(' '&' 41F51' -4' ?A215' '-' @'-A' ?4'
21-6*' 2&F' F2&G514*?' 2' 1'$2' 2?' 51F'&2&F 6

A5' *&641-*&2-5' 15F51':(' @A4' A2F' +55&' 2F$'?5F'
641' ?4E5' -'E5' D2?-' 46' -A5' *&61'5&F C' F'?D4?'-'4&?' 46'
-A5' D2&'?A' G4$51&E5&-(' ?2@' &4' 156*G5' 614E' -A5

1 9 # $' 6# ' +'#' #0'#'' *' 8 #&&#$ /# #' +'#' #0''' &$-'J ###'A' $ K$' 6# ' /' -'FBB A *'/' $'* ' ' $" ' +'#' #0'#' &$-'J#'

F21H -5 E D5?- E *?-51'&G 2G2'&?- A' E 4& -A5 4DD4?'-5 M*21-51?' 46' A'?' H'&GF4 E 9 5 :4 5:-5F ?*:A -144D?' 2?' A5 :4* F(' A4@5$51(' '&' 41F51 -4 E 2H5 +2-- 5 @'-A -A5 &5215?- 5&5 E C(' +56415 A5 ?A4* F :14??' -A5 -A15?AB 4 F & -A5 ;S-A 46) *&5(' -A5 15&:A 21 E C 15B ?* E 5F '-?' E 21:A 56415 M*'--'&G 4 E 5(' 2' +12@ 214?5 +5-@55&' ?4 E 5 15&:A ?4 F'51?' 2&F D2&'21F?' 15?'F5&- '& -A5 :2D'-2 M 52:A D21-C 2??51-'&G -A5 D2B 12 E 4*&- 1'GA- 46 '-?' 4@&' ?4$515'G&' -4 -A5 :14@&' 46 2D 5? 14 E @41F?' -A5C ?44&' :2 E 5 -4 + 4@?(' 2&F E 2&C '$5?' @515 4?- +56415 -A5 612C :4* F +5 M*5 5FM 2' E 5 2&:A4 C 2*G*1C 641 -A5 D51 E 2&5&:5 46 -A5 :4&B :41F ?4 *&1'GA-54*? C 5?-2+ '?A5F +5-@55&' -A5 -@4 G4$51& E 5&-? 6

&' -A5 S-A 46) * C(' -A5 15&:A :14??5F -A5 52B D4 '-2&' 614&-'51 15F51':(' @A4 A2F -2H5&' D4?- 2- -' 51 E 2&4(' 64*&F A' E ?5 6 ?4 @52H(' -A2- A5 @2?' :4 E D5 5F -4 G'$5 @2C 4&' '-?' 2DD142:A(' 2&F 15-152- 4&' A'?' :2D'-2 A5 '&$2F51?' @5&- 641@21F(' 4::*B DC'&G 4&5 D 2:5 26-51 2&4-A51 @'-A '-- 5 15?'?-2&:5 -' -A5C :2 E 5 +56415 2D*2(' @A515 -A5C"15:5'$5F 2 -5 E D4121C :A5:H *1'&G 2 D21 5C 641 -A5 ?*115&B F51 46 -A2- D 2:5(' -A5C +*1?- '&-4 -A5 -4@&(' 2&F

I ? + ?' *' - #' ? #" & G$ "#' G?#&?' *L Q# "' *' $- & #' /' * & $ >- ' /'$ '$&& + + L * +' ?#' ' >' #' -$# G # L /$ # ' ? ' +#"?' ? G# ?$' ' 0>' & + +$ /' *' Q# "' /#L +$/ G# ?' Q# "' # ' $ = $ / ' # * +# "' ?#+' ?$' ?' K$' 6# ' / $"' #0'#' &$-' ?$/' ?# "' J- &' * +' ?$' J#' A 9 # $' +'#' #0'#' &$-' + $ &?' # '&$ ' *' $ ' # '$ # ' JJJ'## *' ?#' # # ' 0>' $ & ' / #& 0# >' & + - $# /' *' P' /0 ' $ '#' &?$-' ? ' $ ' ? ' $' G?#&?' ?#' # L J '###

G'$'&G' 6155' ?:4D5'-4'-A5'1' 6'5&F'?A' D2??'4&?(' +*-:A515F'
' :'-'L5&?' '&' -A5' ?-155-?(' 2&F' D51D5-12-5F' 4*-B
12G5?' @41?5' -A2&' F52-A' 4&' -A5'1' F565&:5 5??' @'$5?'
2&F' F2*GA-51?' -' @2?' 4&' -A'?' 4::2?'4&' -A2-' 5JB
2&F51' 0?' ?4&(' -A5' '&62E4*?' 25?21' 41G'2(' ?5 5:-5F'
641-C' 46' -A5' E4?-' +52*-'6*' 614E' -A5' D1'&:'D2' 2F'5?'
46' -A5' D 2:5(' 2&F' ?5&-' -A5E' +2:H' -4' 4E5' -4' ?@5 '
-A5' :4ED 5E5&-' 46' A'?' ?512G '4' A5' F152F6*' F44E'
46' 2D*2' F5-5115F' 6*1-A51' 15?'?-2&:5(' +*-' '&?D'15F'
?*:A' F5-5?-2-'4&' 46'-A5' 15&:A' -A14*GA4*-' -A5' :4*&B
-1C(' 2?' D14$5F' 46' '&6'&'-5' D15,*F':5' -4' -A5'1' :2*?5' '&'
-A5'1' ?*+?5M*5&-' ?-1*GG 5' $'-A' -A5' D2&'21F? 9

T'&G' 15F51':(' ?A4:H5F' 2-'+1'&G'&G' ?*:A':2 2E'-'5?'
4&' A'?' ?*+,5:-?(' 15?'G&5F' A'?' :2D'-2' @'-A4*-' 2'+ 4@'
'&' '-?' F565&:5(' 2&F' 15-152-'&G' -4' -A5' '? 5' 46' ?:A'2('
:-' < <(' ?44&' 26-51' 5E+12:5F' -A5' :4*&?5' 46' -A5'
15&:A' FE'12' 2$5&?-5'&(' -4' 2::5D-' 2' ?265.:4&F*:-'
'&-4' 12&:5(' 2&F' -A14@' A'E?5 6' 4&' -A5' G5&514?'-C' 46'
4*'?' Z ' A5' 2--51' 15:5'$5F' A'E' :4*1-54*? C('
2&F' 2??'G&5F' A'E' -A5' F*:AC' 46' &,4*' @'-A' 2&' 2ED 5'
15$5&*5' 641' A'?' E2'&-5&2&:5(' @A':A(' -4' -A5' :15F'-' 46'
-A5' 15&:A' H'&G(' @2?' :4&-'&*5F' 26-51' A5' A2F' 4?-' 2'
A4D5' 46' 15:4$51'&G' -A5' :14@&' 46' 2D 5? 6' '-A' -A'?'
?A4@' 46' E2G&2&'E'-C(' A4@5$51(' A5' H5D-' 2' ,52 4*?'
5C5' 4&' A'?' 14C2' G*5?-M *&F51' D15-5&:5' 46' ?A4@'&G'
A'E' -A5' G152-5?-' 15?D5:-(' A5' D 2:5F' 2' G*21F' 4$51' A'?

I' + + ' 6# #$'/#' $-' #''&$-J#A 8#$ ' #0 JJ#J'
-#' + ###' #0''#'&$-#' A' & ###
' #'&? #A M#' A $' ' 8 $#' -'2B4A =
*'3'A'8 #&&#$ /# #' #0''--' ' '#'&?' '#'A' + + '
FB3 FB5 A 9 #$' +'#' #0' +'###'-'@(2

D51?4&(2&F -A*? F5-2'&5F A' E '&' 2 ?41-4 6 A4&4*12+ 5 :2D-'$'-C -4 -A5 F2C 46 A'? F52-A(@A':A 4::*115F ?44& 26-51('& < =

15F51':@2? -A5 2?-4 6-A5 ' 5G'-'E 2-5 +12&:A 46 12G4&(@A4 A5 F -A5 52D4 '-2& ?:5D-15 2 '&5 46 D1'&:5?(@A4(@A2-5$51 E 'GA-4 +5 -A5'1 :A212:-51? '& 4-A51 15?D5:-?(2::41F5F -A2-4 E *&'6':5&-4 D2-14&2G5 -4 5--51? @A':A ?A5F? 2 12C 46 G 41C 4$51 -A5 14*GA5?-4 2&F E 4?-4 -*1+* 5&-4 15'G& -4 E 'GA-4 A2$5 +55& 5JD5:-5F -A2-4 2& 2E'2+ 5 2&F 2::4ED '?A5F D1'&:5 'H5 15F51':@4* F A2$5 F4&5 ?-' E 415 -4@21F? -A5 E412 F5$5 4DE5&-4 46 A'? D54D 5(+C A52 '&G *D -A5 2&'E4?'-'5? @A':A A2F ?4 4&G 65?B -515F '& -A5'1 +4?4E?' '? G5&-5 :A212:-51(A4@B 5$51(@2? ' ?*'-5F -4 -A5 5$' -'E5? 4& @A':A A5 A2F 62 5& 2&F '-'? &4-'ED14+2+ 5 -A2-4 A5 64*&F G152,-51 :4&-5&-E5&-4 '& -A5 :2 E 2&F :*-'$2-5F 15B -'15E5&-4 46 A'? 2--51 C521?(?@55-5&5F +C -A5 ?CEB D2-A'5? 46 61'5&F?A'D @A':A 2F$51?'-C A2F D14$5F(9 -A2& @A5& D 2:5F 4& -A5 F2LL '&G A5'GA-? @A':A 2-B -12:-4 -A5 2FE'12-'4& 2&F 5&$C 46 E2&H'&F.-

I ? $/ 'G# $/#>'&$ + +# /' ? $- # $ - $ K 'G? '*#/ #>' ?# >$' +$ '* + ' 0 $ #* $& $ 'G# ?' ? ' & / &' * $ ' $ /' # / /' *' +$ >' *?# ' #0 'G? '" $ #L /' # ' * ?$ ' ?$' G# >' # '$0 ' 'K '# ' ? L ?# ' *'$& ' 6# '$ # - #&$' ** # '$** /'$ 0 #+ >' ' ? ' '# ' *'?# * #+$ ' ' #" ' ? ' +

-#&# '$' +$ >' *' ? +' G ' - / & /' # ' ? ' /$>' *' ?# '$/' # > *' U' , ' +$ $' ' 0 $V $> ' ? ' -?# -?#& +$ ' T', ^' ' " ' - < + ', # & *#& $ # $/' # ' '#/ $ ' 0 $ < $& - , ' , $+= , $+' +$" $' - ' - ' +# #= + < # # # " $' +' * $+' & $ ' '?# - - $ # & M $ V $&# ' $ ' #0 '#' & 'JJ##

S

21 C '& 21:A(4&?2 $4 46 41F4$2 A2F 15:5'$5F A'? 6'1?- 466':'2 '&-5 'G5&:5 46 -A5 D21-'-'4& -152-C(2&F 46 A'? 4@& 2DD4'&-E5&- -4 -A5 D4?-46 '5*-5&2&-. G5&512 46 2 2+1'2 2&F D* '2 5 65 - &2-*12 15B G15- 2- +5'&G :2 5F -4 2:- 2G2'&?- 2 D1'&:5 @A4?5 :A212:-51 A5 5?-55E5F(2&F @'-A @A4E A5 A2F 4&:5 +55& D 2:5F '& -A5 E4?- '&-'E2-5 2&F 61'5&F C 15 2B -'4&? & -A5 -1*5 ?D'1'- 46 :A'$2 1C(A5 15-*1&5F 15F51':(+5641 5 -2H'&G *D 21E? 2G2'&?- A'E(-A5 F*:AC 46 - &G5 2&F -A5 4-A51 21G5 F4E2'&? @'-A @A':A -A2- E4&21:A A2F 15M*'-5F A'? ?51$':5? '& -A5 2-5 @21(15M*5?-'&G 2- -A5 ?2E5 -'E5 -4 +5 15 52?5F 614E A'? 4+ 'G2-'4&? 46 A4E2G5 2&F 652 -C A5 G5&514*? E4&21:A 152F' C :4ED '5F @'-A -A5 2--51 D21- 46 A'? 15M*5?-(+*- '&?'?-5F 4& A'? 15-2'&'&G -A5 G12&-(@A':A A5 F5: 215F 2& '&2F5M*2-5 :4ED5&B ?2-'4&(26-51 2 (641 -A5 +5&56'-? -A5 152- 2D-2'& A2F 4&:5 15&F515F A'E 9

A5 5$'5? 2??5E+5F 2- 5??'&2 2E4*&-5F -4 A52$C 21E5F('GA- A41?5(2&F S '&62&-1C(-4B G5-A51 @'-A 2 ?E2 +4FC 46 D2&'?A $5-512&?(@A':A -A5 2?-' '2& 2E+2??2F41 A2F :4 5:-5F '& -2 C A5 &*E+51 46 -A5 641:5? @2? '&:4&?'F512+ 5(+*- -A5C @515 '& 5J:5 5&- :4&F'-'4&(@5 F'?:'D '&5F(2&F ?52B ?4&5F -4 2 -A5 -4' ? 2&F F'66':* -'5? 46 @21 & -A5 -A 46)* C(-A5 152- 2D-2'& 2&F5F 2- 14D52(2&F :4EE5&:5F -A5 :4&M*5?- 46 2 2+1'2(41F51'&G -A5 6 55- -4 H55D 2 4&G -A5 :42?,U '& 41F51 -4 6*1&'?A

]' 9 #$' 6# ' +'#' #0'#'' A ? ' / ' 8 ' $-' &'JJ# A' &'HHH: A 'P '## :# ' -'F4E $ K$' +'#' 0'#'&$-'J#'

@A2-5$51' ?*DD '5? A5' E 'GA-' &55F' A5' G14*&F' @2?' 62E' '21' -4' A'E(2&F' A'?' D14G15??' @2?' 62:' '-2-5F' +C' -A5' 4 F' 15 2-'4&?' A5' A2F' 641E5F' -A515(2?' @5 ' 2?' +C' -A5' 'ED41-2&-' D4?-?' @A':A' -A5' D2&'?A' G4$51&E5&-' A2F' 15-2'&5F' '&' '-?' A2&F?' 2?' 2&' '&F5E&'6':2-'4&' 641 -A5' 5JD5&?5?' 46' -A5' 2-5' @21' 4-@'-A?-2&F'&G' -A5' 4DD4?'-'4&' 41' :4 F&5??' 46' -A5' G152-' &G5$'&' 41F?(@A4' 15?'F5F' '&' -A'?' M*21-51(-A5' 5&-'15' 4::*D2-'4&' 46' -A5' -@4' 2 2+1'2?(@'-A' -A5' 5J:5D-'4&' 46' 215&-4(@2?' 5665:-5F' '&' 5??' -A2&' 2' 1&4&-A 9

A5' 2--51' D 2:5(15E21H2+ 5' '&' 2&:'5&-' -'E5?' 641' '-?' F565&:5' 2G2'&?-' 2&&'+2 (@2?' 46' -A5' 2?-' 'ED41-B 2&:5' T'&G' 15F51':' A2F' ?5&-' A'?' 5 F5?-' ?4&' -A515(-A5' *H5' 46' 2 2+1'2(2' C4*-A' 46' 2+4*-' 64*1-55&' C521?' 46' 2G5(*&F51' -A5' :215' 46')*2&' F5' *5$212(4*&-' 46' 4-5&L2(@'-A' 2' ?-14&G' +4FC' 46' -144D?(:4&?'F51'&G' '-' -A5' D 2:5' 46' G152-5?-' ?5:*1'-C' '&' A'?' F4E'&'4&?' &F5D5&F5&- C' 46' -A5' ?-15&G-A' 46' '-?' @41H?('-' @2?' 15&F515F' &521 C' '&2::5??'+ 5' +C' '-?' &2B -*12' D4?'-'4&(A2$'&G' &4' :4EE*&':2-'4&' @'-A' -A5' E2'&' 2&F(5J:5D-' +C' -@4' +1'FG5?' 2-' 4DD4?'-5' M*21-51?' 46' -A5' -4@&(:4EE2&F5F' +C' ?-14&G' -4@51?(@A' 5' '-?' 5JD4?*15' -4' -A5' ?52' E2F5' '-' 52?' C' 2::5??'+ 5' -4' ?*DB D '5? 614E' 2+142F

4&?2 $4' ?2@' -A2-' -A5' 4& C' E5-A4F' 46' 15F*:'&G' -A5' D 2:5' E*?-' +5' +C' + 4:H2F5' '?2G1552+ 5' 2?' -A5' F5 2C' @2?(A5' D15D215F' -4' 2C' 15G* 21' ?'5G5' -4' '-(41B F51'&G' -A5' 6 55-' -4' ?2'' 14*&F' -A5' ?4*-A51&' D4'&-' 46

I' 0$ &$' +'##' >' JJJ' #0'#'' &$-'J#> A $#$ $' +' &$-'J#' &''### A 9 #$' +'#' ##' #0' JJ'##' &$-'#J

2 2+1'2(' 2&F' + 4:H2F5' -A5' D41-' 46' 215&-4(' @A' 5' A5' -A15@' *D' @41H?' 4&' -A5' 2&F' ?'F5(' @A':A' :4EB E2&F5F' -A5' D2??5?' -4' -A5' -4@&(' 2&F' :*-' 466'-?' :4E.' 12*&'/U2-'4&?' @'-A' -A5' &5'GA+4*1'&G' :4*&-1C' A5' D2:5(' A4@5$51(' @2?' @5 ' $':-*2 5F(' 2&F' -A5' G211'?4&' D15D215F' -4' E2'&-2'&' '-' -4' -A5' 2?-9

4-A'&G' -1'5?' E415' ?5$515 C' -A5' D2-'5&:5' 2&F' F'?B :'D '&5' 46' -A5' ?4 F'51' -A2&' 2' '65' 46'? *GG'?A' '&2:-'4&(' *&5& '$5&5F(' 2?' '&' -A5' D15?5&-' '&?-2&:5(' +C' 2&C' 46' -A5' 15&:4&-15?(' 41' 652-?' 46' 21E?(' @A':A' H55D' *D' E' 'B -21C' 5J:'-5E5&-(' 2&F' G12-'6C' -A5' :*D'F'-C' 41' 2E+'-'4&' 46' -A5' @211'41' A5' D2&'?A'-144D?(' :44D5F' *D' @'-AB '&' -A5'1' '&-15&:AE5&-?(' 2&F' F'?G*?-5F' @'-A' -A5' 2&B G*'F' E4&4-4&C' 46' -A5'1' '65(' :2?-' E2&C' 2' @'?-6*' G 2&:5' -4' -A5' ?-'11'&G' ?:5&5?' 46' @21' '&' -A5' :5&-15' 46' -2 C(' @A515' 25?21' 41G'2' A5 F' 4*-' E2G&'6':5&-' D14B E'?5?' 46' D2C' 2&F' D *&F51' - ' 2 ' @A4' 5E+21H5F' '&' A'?' 2F$5&-*14*?' 5&-51D1'?5?' 5' :4*1-5F' -A5' 2'F(' '&' D21B -':* 21(' 46' -A5' D2&'?A' $5-512&?(' @A4?5' @41-A' A5' @5 ' *&F51?-44F' 641' -A5C' A2F' 46-5&' ?51$5F' *&F51' A'?' +2&B &51(' '&' A'?' 65*F?' @'-A' -A5' -U'2&' D1'&:5?' &' :4&?5B M*5&:5' 46' -A5?5' '&F*:5E5&-?(' ?4E5' 46' 4&?2 $40?' E5&' @515' 64*&F' -4' F5?51-' 5$51C' F2C' @A' 5' -A4?5' @A4' 15B E2'&5F' @515' +5:4E'&G' A4*1 C' E415' F'?:4&-5&-5F(' 614E' -A5' 21G5' 211521?' F*5' 614E' -A5' G4$51&E5&-' 641' 51F'&2&F(' 2?' 2 152FC' 15E21H5F(' :4&F*:-5F' A'?' 4D5B 12-'4&?' @'-A' 2' ?-'&-5F' 5:4&4EC(' $51C' F'66515&-' 614E

I' ' P '## :# $ ' -' F42 A' JJ#J' &$-'### A ? #&$' / ' 8 ' $' * ' 5' A' 8#$ ' #0' $-# $ ' &$-' JJJ#

-A5 D14 E D- 2&F '+512 5JD5&F'-*15 46 -A5 M*55&(2 B @2C? :4 E D5-5&- -4 '-? 4+,5:-9

-1'$'2 '&:'F5&-(2- -A'? -'E 5(?@5 5F -A5 D4D* 21 F'?:4&-5&- '&-4 E *-'&C A5 15&:A 6 55-(26-51 -A5 :2D-*15 46 2D 5?(@2? 41F515F -4 -A5 5$2&- -4 2??'?- -A5 5&5-'2&? 2G2'&?- -A5 *1H? 2$5&?-5'&(2E+'B -'4*? 46 5: 'D?'&G -A5 5JD 4'-? 46 -A5 152- 2D-2'&(-*1&5F A'? 21E? 2G2'&?- '-C 5&5(@'-A -A5 F5?'G& 46 15:4$51'&G '- 641 -A5 15D*+ ': 5 -4-2 C 62' 5F '& -A5 2--2:H(2&F A'? 6 55- @2? ?44& 26-51 ?:2--515F +C 2 -5E D5?-(2&F A'? 4@& ?A'D @15:H5F 4& -A5 '? 5 46 51'G4 5 ?*+?5M*5&- C 64*&F A'? @2C(@'-A ?5B $512 46 A'? D1'&:'D2 466':51?(-4 -A5 ?A415? 46 2 2B +1'2(@A5'- A5 2&F5F '& -A5 E4?- 641 41& 2&F F5?D5B 12-5 D 'GA- 4&?2 $4(-4*:A5F @'-A A'? E'?641-*&5?(&4 ?44&51 521&5F A'? &5:5??'-'5? -A2& A5 ?5&- A'E 2+*&F2&- ?*DD '5? 46 D14$'?'4&?(2FF'&G 2 ?51$':5 46 D 2-5(`&F 2 $21'5-C 46 5 5G2&- 2DD215 641 A'E?5 6 2&F 64 4@51?% :4&?* -'&G A'? 4@& E*&'6':5&- ?D'1'- '& -A'?(E*:A E415 -A2& -A5 'E'-5F ?-2-5 46 A'? 6'&2&:5? 6

A'? 5J:5??'$5 '+512 '-C @2? $51C '&4DD41-*&5 A5 ?4 F'51? 4*F C :4E D 2'&5F -A2-% -A5'1 G5&512

1 'P $ $ ' ? -$L Q# "' /# $ /' * ' ? ' & L # ?' +# # '$':# $' + ' , ' + >' *' $>'0 ' '?$' '0 '* >' #0 ' *' ?#' * #&$# ' ? '0$ "$# ' 9+# $' $#' *'?#'+$ ' 6 ' /' ?' 6# ' +'#' #0'###' &$-'J ## +- ' $J#+# #$ ' G? ' ?$/' , /' ?' $ ' *' 4EE EEE X' +0 ' :# #K' +'### / &$ '* +' -$# ' ?$'#'G$' #0'#' -'4B3 A 'P '## :#$ ' $'+ &?' + >'$'G /' **#& -'F4F A ' '#'&?')2')F

8 F

S= ' 7

64*&F' -152?*15?' -4' ?M*2&F51' 4&' 6415'G&51?(@A' 5' A'?'
4@&' -144D?' @515' F5612*F5F' 46' -A5'1' D2C ' A5' '?B
:2C2&?(2' D54D 5' 46' @A4E ' 4&?2 $4' *?5F' -4' ?2C(R' A5'
A2F' 12-A51' +5' 2' '4&.H55D51' -A2&' *&F51-2H5' -4' G4$51&'
-A5E(K' -44H' -A5' 52F' '&' -A5' -*E* - ' -' ?44&' ?@5 5F'
'&-4' 4D5&' '&?*115:-'4&' M 2&F' -A5' E5&(641E'&G' -A5EB
?5 $5?' '&-4' 15G* 21' :4ED2&'5?(E21:A5F' -4' -A5' G5&5B
12 0?' M*21-51?(2&F' F5E2&F5F' D2CE5&-' 46' -A5'1' 21B
1521?' &5' 65 4@(E415' '&?4 5&-' -A2&' -A5' 15?-(5$5 B
5F' 2' D'H5' 2-' A'?' +152?-' @'-A' -A5' E4?-' 2&G1C' 2&F' E5B
&2:'&G' 44H?' 4&?2 $4(A4@5$51(15-2'&'&G' A'?' ?5 6.'
D4??5??'4&(G5&- C' D*-' '-' 2?'F5(?2C'&G' @'-A' 2' G44F.'
&2-*15F' ?E' 5(R' 'GA51(C4*' :215 5?? H&2$5P '6-' C4*1'
2&:5' A'GA51(41' C4*' @' ' 1*&' E5' -A14*GA' '&' C4*1'
,5?-'&G K' ?' A5' @2?' 15'-512-'&G' A'?' 2??*12&:5?' 46'
-A5' @2&-' 46' 6*&F?(2&F' A'?' :4&6'F5&-' 5JD5:-2-'4&' 46'
?D55F' C' 4+-2'&'&G' -A5E(2' '?:2C2&' :2D-2'&' :2 5F'
4*-(R' 5&F' C4*1' F2*GA-51' -4' -A5' +14-A5 (2&F' -A2-'
@' ' ?44&' D*-' C4*' '&' 6*&F?PK' A'?' @2?' 2' 62$4*1'-5'
F2*GA-51' &2E5F' $'12(@A4E' 4&?2 $4' 4$5F' ?4'
-5&F51 C(-A2-' A5' @4* F' &4-9' D21-' @'-AX(A51' 5$5&' 4&'
A'?' :2ED2'G&?' -A4*GA' ?-*&G' -4' -A5' A521-' +C' -A'?'
2*F2:'4*?' -2*&-(A5' E2F5' &4' 15D C(+*-(@'-A4*-'
:A2&G'&G' 2' E*?: 5' 46' A'?' :4*&-5&2&:5(:4&-'&*5F('
'&' -A5' ?2E5' -4&5' 2?' +5 6415(-4' 5JD4?-* 2-5' @'-A' -A5'
'&?*1G5&-?(@A4' 2-' 5&G-A' @515' D15$2' 5F' 4&' -4' F12@'
466(2&F' F'?D51?5' -4' -A5'1' M*21-51?' A5' &5J-' E41&B
'&G(-A5' 2DD2 '&G' ?D5:-2: 5' 46' -A5 '65 5??' +4FC' 46'
-A5' '?:2C2&(?*?D5&F5F' +C' -A5' &5:H' 614E' 2' @'&F4@'
46' -A5' A4*?5' '&' @A':A' A5' A2F' +55&' M*21-515F(2FE4.

&'?A5F ʻ -A5ʻ 21E C ʻ -A2-ʻ -A515ʻ @515ʻ 'E'-?ʻ -4ʻ -A5ʻ G5&5B 12 0?ʻ 641+5212&:5ʻ '-ʻ @2?ʻ &4-ʻ D1*F5&-ʻ -4ʻ 4$51?-5D 9

&ʻ *&5JD5:-5Fʻ 5$5&-(ʻ @A':Aʻ -44Hʻ D 2:5ʻ 2-ʻ -A'?ʻ ,*&:-*15(ʻ :4&-1'+*-5Fʻ 5$5&ʻ E415ʻ -A2&ʻ -A'?ʻ E4&'-41Cʻ 5??4&ʻ -4ʻ 15?-415ʻ ?*+41F'&2-'4&ʻ -4ʻ -A5ʻ 21E C ʻ A'?ʻ @2?ʻ -A5ʻ :2D-*15ʻ 46ʻ 2ʻ 5&45?5ʻ G2 54&ʻ @'-Aʻ 2ʻ $2 *2B + 5ʻ 615'GA-(ʻ :A'56 C ʻ '14&(ʻ +4*&Fʻ -4ʻ ?4E5ʻ *1H'?Aʻ D41-(ʻ 2?ʻ '-ʻ @2?ʻ ?2'F('&ʻ -A5ʻ 5$2&-(ʻ @A':Aʻ 4&?2 $4(ʻ E4$5Fʻ &4ʻ F4*+-ʻ +Cʻ A'?ʻ L52ʻ 641ʻ -A5(ʻ A1'?-'2&ʻ :2*?5(ʻ 41F515Fʻ -4ʻ +5ʻ ?5'L5Fʻ +Cʻ -A5ʻ D2&'?Aʻ :1*'?51?ℕ 2&Fʻ -A5ʻ :21G4ʻ -4ʻ +5ʻ F'?D4?5Fʻ 46ʻ 641ʻ -A5ʻ ?2-'?62:-'4&ʻ 46ʻ A'?ʻ -144''?ʻ '4$'4ʻ :A21'-2+ Cʻ 5J:*?5?ʻ -A'?ʻ 2:-ʻ 46ʻ A4?-' '-Cʻ 2G2'&?-ʻ 2ʻ 61'5&F Cʻ D4@51ʻ @'-Aʻ -A5ʻ 15E21H(ʻ -A2-ʻ Rʻ @A5&ʻ -A5ʻ 152-ʻ 2D-2'&ʻ F'Fʻ 2&Cʻ -A'&Gʻ :4&-121Cʻ -4ʻ 2@(ʻ A5ʻ @2?ʻ @4&-ʻ -4ʻ ?2C(ʻ 0ʻ ʻ G5&512ʻ E*?-ʻ ?5:*15ʻ -A5ʻ $':-41Cʻ 2-ʻ 2 ʻ A2L21F?(ʻ 1'GA-ʻ 41ʻ @14&Gℕ 2&F(ʻ @A5&ʻ A5ʻ A2?ʻ F4&5ʻ -A'?(ʻ A5ʻU:2&ʻ :4ED5&?2-5ʻ -A4?5ʻ @A4Eʻ A5ʻ A2?ʻ '&,*15Fʻ @'-Aʻ -5&64 Fʻ +5&56'-?0ʻ I6

A5ʻ *&5JD5:-5Fʻ 5&G-Aʻ 46ʻ -A5ʻ ?'5G5ʻ 46ʻ 215&-4ʻ F5-51E'&5Fʻ 4&?2 $4ʻ 2-ʻ 6-&G-Aʻ -4ʻ 2F4D-ʻ +4 F51ʻ E52B ?*15?ʻ 641ʻM*':H5&'&Gʻ '-?ʻ -51E'&2-'4&ʻ A5ʻ :'-C(ʻ @A4?5ʻ '&?* 2-5Fʻ D4?'-'4&ʻ A2?ʻ +55&ʻ &4-':5F(ʻ @2?ʻ +4*&F5Fʻ 4&ʻ -A5ʻ &41-Aʻ +Cʻ 2ʻ 2H5(ʻ 41ʻ 12-A51ʻ 21Eʻ 46ʻ -A5ʻ ?52(ʻ 641EB '&Gʻ 2&ʻ 5J:5 5&-ʻ '&-51'41ʻ A21+4*1(ʻ 2+4*-ʻ 5'GA-55&ʻ E'5?ʻ '&ʻ:'1:*E6515&:5ʻ A5ʻ '&A2+'-2&-?(ʻ -1*?-'&Gʻ -4ʻ -A5ʻ &2-*12ʻ F565&:5?ʻ 46ʻ -A'?ʻ M*21-51(ʻ A2Fʻ 4E'--5Fʻ -4ʻ D14-5:-ʻ '-ʻ +Cʻ 641-'6':2-'4&?(ʻ 2&Fʻ -A5ʻ A4*?5?ʻ 14?5ʻ 2+.

Iʻ ?ʻ/ʻ8ʻ $-ʻ&$-ʻJJJ#'ʻ =!=ʻ P '##ʻ :#$ʻ 8 $'#ʻ
MA ; # $ $ʻ :#/$ʻ +ʻ#ʻ --ʻ #0ʻ#ʻ-ʻF44
F@Fʻ F@4 A#-'##:#ʻ-ʻF4F

1*D- C'614E'-A5' E21G'&'46'-A5'+2?'&' &-4'-A'?' 15?51B $4'1'-A5' D2&'?A' :4EE2&F51' 15?4 $5F'-4'-12&?D41-' ?*:A"46'A'?' $5??5 ?(' -A5&'1'F'&G' '&'-A5' 4*-51' +2C(' 2?(614E'-A5'1'?'L5(' :4* F'+5' :4&$5C5F' 2:14??' -A5'&2114@' '?-AE*?' @A':A' F'$'F5F'-'614E'-A5''&&51

6-51''&:15F'+ 5'-4'(' -@5&-C'46'-A5' ?E2 5?-' :126-' @515' E4$5F' 4&' A*G5' :21?' 2&F' 14 51?' 2:14??' -A5' '&B -51$5&'&G' 2&F(' 2&F' ?265 C' 2*&:A5F' 4&' -A5' +4?4E' 46' -A5' 2H5' A5' @A4 5' 4D512-'4&' @2?' D51641E5F' 2E'F' -A5' 5J:'-'&G' 2::4ED2&'E5&-?' 46' F'?:A21G5?' 46' 41FB &2&:5(' ?-12'&?' 46' E21-'2' E*?':(' 2&F' 4*F' 2:: 2E2B -'4&?' 46' -A5' ?4 F'51C' A5' '&A2+'-2&-?' 46' 215&-4' ?2@' @'-A' :4&?-51&2-'4&' -A5'6 55-' ?4' 2-5 C'6 42-'&G' '&' -A5' 4D5&' 4:52&' *&F51' -A5'1' 'ED15G&2+ 5'@2 ?(' &4@' M*'--'&G' '-?' &2-'$5' 5 5E5&-(' 2&F' E4$'&G(' 2?' '-' @515 +C' E2G':(' 2:14??' -A5' 2&F(' -4' 2??2*-' -A5E' 4&' -A5 M*21-51' @A515' -A5C' @515' 52?-' F565&F5F 9

A5' 52D4 '-2&' :4EE2&F51' ?2@' '-' @4* F' +5' 'EB D4??'+ 5' -4' A4 F' 4*-' 4&G51(' @'-A4*-' :4ED14E'?'&G' -A5' D51?4&2' ?265-C' 46' -A'' C4*&G' D1'&:5' *&F51' A'?' :215' 5' 2::41F'&G C' 5&-515F' '&-4' &5G4-'2-'4&?' 641' 2' -1*:5' @'-A' -A5' 152-' 2D-2'&(' F*1'&G' @A':A' 21-'B :5?' 46' :2D'-* 2-'4&' @515' 2112&G5F(' G*212&-55'&G' -4' -A5' *H5' 46' 2 2+1'2' 2&F' A'?' 64 4@51?' -A5' 1'GA-' 46' 5$2:*2-'&G' -A5' D 2:5' 2&F' G4'&G' @A515$51' -A5C' '?-5F' A5' D2&'?A' G5&512(' '&' 41F51' -4' G'$5' G152-51' ?2:15FB &5??' -4' -A5?5' 5&G2G5E5&-?(' +4*&FUA'E?5 6' -4' 4+?51$5' -A5E' +C' 2&' 42-A' 4&' -A5' ?2:12E5&-6

I' P ' 0# -$A ? #&$ ' 9 #$'6# ' +'#' #0'#' /'8$ ' $-#$ '&$-'JJJ###' &$-'##' ### A 8 #&&#$ /# # +#

&' -A5' <?-' 46' 21:A' < (' -A5' D2&'?A' 21EC' -44H' D4??5??'4&(' 2::41F'&G' -4' 2G155E5&-(' 46' -A5' :'-C' 46' 215&-4N' 2&F' -A5' *H5' 46' 2 2+1'2' @'-A' A'?' ?*'-5' @2?' D51E'--5F' -4' 52$5' '-(' '&' 41F51' -4' 15,4'&' A'?' 62-A51' '&' 12&:5' 52&-'E5(' 2F$':5?' @515' 15:5'$5F' 614E' 51F'&2&F' -A5' 2-A4 ':(' '&?-1*:-'&G' 4&?2 $4' 4&' &4' 2::4*&-' -4' ?*6651' -A5' C4*&G' D1'&:5' -4' 5?:2D5' 614E' A'?' A2&F?(' 2?' A5' @2?' 2' D 5FG5' 46'-44'G152-' 'EB D41-2&:5' 641' -A5' D2&'?A' G4$51&E5&-' -4' 15 '&M*'?A' A5' G5&512 (' '&' 4+5F'5&:5' -4' -A5?5' 41F51?(' ?5&-' 26-51' -A5' F*H5(' @A4' A2F' D14:55F5F' '&' :4ED2&C' @'-A' -A5' 4*&-' 46' 4-5&L2' 2?' 621' 2?' '-4&-4(' 4&' A'?' @2C' -4' -A5' 41-A(' 2&F':4E E2&F5F' A'E' -4' +5' 2115?-5F' 2&F' +14*GA-' +2:H' -4' 215&-4' 4-' 4&G' 26-51(' A5' :2*?5F' A'E' -4' +5' :4&$5C5F' 4&' +421F' 4&5' 46' -A5' E5&.46.@21' '&' -A5' A21+4*1(' 2&F(' '&' :4&-5ED-' 46' A'?' ?4 5E&' 5&G2G5E5&-?(' ?5&-' 2' D1'?4&51' -4' D2'& 9

#0' ' -' @)E' A' 8#$ ' #0' JJ#J' &$- ### A $ #' $ #' /($ #$' + 'J#' ' -' 2(?' '$ # ' $? # # ' /#** I' + ' # & &# $0 >' ?$' $' #' ?' / $# ' *' ?#' # " ' ' ?$' ' * G /' $ ' 8# '# ' $' & +- $ >'$ /'- $ >'$&L , $# /' G# ?' ?' - # &#-$' $&L ' $"' '# ' ?' >' *$&' # ' G?#&?' ' G /' G# # " >' ' + ' /# & -$ &>' 8 $ =' ' ('0 $&?' *'*$# ?' I' ?' > "' D' *' $ $0 #$]' 9 # $' + '#' #0'#' '&$-' '# A 0$ &$' + '##' >' JJJ' &$-' J#' &' J' A' J##' A' $' * ' 5 A $ K$' #0'#' &$-' J#' $ > ' G?' G$' -

?' > "' - # & (' $ #'$' $' & ' G? ' ?' J- # & /' ?' + ' ? $0 ' & - # ' - $D' *' ?#+' #' ?' ?#"? ' + 'R' / & ' $+, ' ' ' " ' ' "#' $ " # '&?" ' +# ' # / # ' * +/' " "# V' ' - ' -# $ ' -' && ## .' 6 ' '#' /' ' ?' > $' 2@@E' 0 ' G# ? ' ' '?$'# "', # /' -$# '& $ >' ' ?' * /' - L /#& # ' *'?#' * # /' $ K '< R' $+' +#?#' $+' + - ' ' =' # '& +' //# $' & - $' $? - '* $& , ' $' 0' & -#/ ' " - '&$ $+ R - $' $ # $' & "$(

SS

A5 &2-'4&2 @1'-51? '2$5 E2F5 E2&C 2@H@21F 2--5ED-? -4 $21&'?A 4$51 -A'? 2-14:'4*? 2:- 46 D516'FC '& -A5'1 62$4*1'-5 A514 V*1'-2 $'&F':2-5? '- +C 2 5-B -51 '614E -A5 52D4 '-2& D1'&:5 -4 4&?2 $4(15B M*5?-'&G -A5 2--51 -4 -2H5 -A'? ?-5D(?'&:5 A5 D15651B 15F 2 15?'F5&:5 '& D2'& -4 4&5 '& 12&:5(+*- :4* F &4- @'-A F5:5&:C 2DD521 -4 2:- '& 4DD4?'-'4& -4 A'? 62-A510? @'?A5? 4& -A5 ?*+,5:- 6 ?*:A 2 5--51(A4@5$51(@515 152 C 4+-2'&5F 614E -+5 D1'&:5(A'? -5&F51 C521? @4* F 5&-'- 5 '- -4 '-- 5 @5'GA-(2&F 46 :4*1?5 '- @4* F 26641F &4 ?*+?-2&-'2 G14*&F 641 ,*?B -'6':2-'4& &4-A51 5JD 2&2-'4& '? 466515F +C 24 4 '4$'4(@A4 ?-2-5? -A2- -A5 152- 2D-2'&(*&F5-51B E'&5F @A2- :4*1?5 -4 2F4D-(-44H -A5 4D'&'4& 46 :51B -2'& 521&5F ,*1'?-? A'? ?2G5 +4FC F5:'F5F -A2- 4&?2 $4 @2? &4- +4*&F +C A'? 42-A(?'&:5 '- @2? 15D*G&2&- -4 A'? D212E4*&- 4+ 'G2-'4&? -4 A'? E2?B -51 2&F -A2- -A5 2--51 @2? &4- +4*&F +C '-(?'&:5 '- @2? E2F5 @'-A4*- A'? D1'$'-C9 ..... A5 E2& @A4 -1*?-? A'? A4&4*1 -4 -A5 -2ED51'&G 46 :2?*'?-?(A2? D21-5F @'-A '- 2 152FC

A5 4& C D2 '2-'4& 46 -A5 2:- E*?- +5 ?4*GA- '& -A5 D15$2 5&- 2J'-C 2&F :411*D-'4& 46 -A5 D51'4F(@A':A '? 1'65 @'-A 5J2ED 5? 46 -A5 E4?- 6 2G12&- $'4 2-'4& 46 +4-A D*+ ':2&F D1'$2-5 62'-A 2F -A'?

I 9 # $ 6# #0 #' &$- / , #$ $ $/ '### A P '## :# #0 # $ " $, # #! ?$> , / / /? - '" *# / _V 6# / =
$ #$ $ & > /# - *- -$ $ +##' - B)@ .
8 $ ' $&? > G# ? ? ==========U '$ ''## , # +$ D ! -$# & '" $ = # ? , # $ _I

+55& -A5 2:- 46 2 641L2('&F55F(41 2 41G'2('- :4* F &4- 152?4&2+ C A2$5 5J:'-5F ?*1D1'?5 +*- :4E'&G 614E 4&5 46 2 &4+ 5(E2G&2&'E4*? &2-*15('H5 4&. ?2 $4(5J5ED 21C '& A'? D1'$2-5 '65(2&F *&?-2'&5F @'-A 2&C 46-A5 G14??51 $':5? 46-A5 2G5('- 5J:'-5F G5&512 2?-4&'?AE5&- 2&F 15D14+2-'4& 5$5& 2E4&G A'? :4&-5ED4121'5? - A2? 56- 2 15D142:A 4& A'? &2E5(@A':A -A5 A'?-41'2& E2C 15G15-(+*- :2&&4- @'D5 2@2C

.

Z

7 == 7 6 =8 :

8

< ;(<

@2? A21F C -4 +5 5JD5:-5F -A2- -A5 D21-'-'4& -152-C +5-@55& 12&:5 2&F D2'&(E2F5 ?4 E2&'B 65?- C '& :4&-5ED- 46 2 G44F 62'-A(@4* F +5 E2'&B -2'&5F 2&C 4&G51 -A2& ?*'-5F -A5 :4&$5&'5&:5 46 -A5 15?D5:-'$5 D21-'5? A5 15&:A E4&21:A('&F55F(?55E? -4 A2$5 D15D215F(614E -A5 6'1?-(-4 F'?D5&?5 @'-A '- ?4 ?44& 2? A5 A2F ?5:*15F A'? 4@& E4'5-C 46 -A5 H'&GF4E 9 2&F ?2G2:'4*? E5& 2- -A5 D2&'?A :4*1- '&65115F -A2- T'&G 51F'&2&F @4* F F4 2?

I $ > # $ G # * + : #& G?# / L $# /? ?# G$> JL $ / #$ - $D *? ** +$/ 0> ? &? +# $ # # / & ? - 0 #& 0 $D G# ?- -$# $ /- - ? # +$ # ?# / #" $- !/ $+, $ / '#& " 8$ +$ $, # +L # #J & $ @' 0# : =

+ $ #+ $' = + / #0 $# $ +- # +$ # + 8$ # + , #$ = , $ - : +** $"#$ & , # $- ' 0# ? #= # $ + /#&$, ' # G# 8$ # " $? - & $ ' $ - M0 #/#$* -- #$ V !/ $+, $ / '#& ? # /$ /& 0 " 8$ +$ $, # +L # #J & $ @' 0# : = 2@E2 - -# $ + - &&JJJ#

E * : A @A5& A5 ?A4 * F +5 '& 2 ?'-*2-'4& -4 2??51- A'? : 2'E ?@'-A ?* : : 5?? 9

- @2? 2 -4G5-A51 'E D14+2+ 5(@A2-5$51 E 'GA- +5 -A5 G44F 62'-A 46 -A5 D21-'5?(-A2- 2& 2112&G5E 5&- : 4 * F 4&G ?*+?'?-(@A' : A ?4 1 * F5 C 15&- 2?*&F51 -A5 E 5E +51? 46 -A'? 2& : '5&- E 4&21 : AC 41 -A2- 2 -A4 * B ?2&F D4'&-? 46 : 4 '?'4& ?A4 * F &4- 21'?5 +5-@55& 1'$2 A4?-?(C'&G 2? '- @515 4& -A5'1 21E ?@'-A'& +4@?A4- 46 52 : A 4-A51(2&F '& $'5@ 46 -A5 1' : A ?D4' @A' : A 52 : A 15G21F5F 2? '-? 4@& * : A G14 * &F? 641 1 * D- * 15 F'F 4 : : * 1(?44&51 D14+2+ C -A2& 5'-A51 D21-C A2F 6415?55&(2&F : 51-2'& C +56415 -A5 T '&G 46 12G4& @2? D15D215F -4 E55- '-

A5 'E E5F'2-5 : 2 * ?5 @2? -A5 5J-15E5 C 44?5 2&B G * 2G5 46 -A5 D21-'-'4& -152-C(@A' : A 2?? * E5F ?* : A 2 G54G12DA' : 2 F'$'?'4& 46 -A5 H'&GF4E '&-4 64 * 1 D14B $'&: 5? 2? F'F &4- : 4115?D4&F @'-A 2&C 2& : '5&- F'$'B ?'4&(2&F ?-' 5?? @'-A -A5 E4F51&(+C @A' : A -A5 &* E +51 @2? E * -'D '5F -4 -@5 $5 6 A5 : 5&-12

$ > $* #&# "? ' / * ? -$ # # $ > & + + 'G# ?'?# , ? G/L ? - # #& '# G * ? -$ # ? ' #" ! $&# # $+, - $ $ -$ + , $+ #0# 8$ # # # ?$= 0# $#, $ / , M # #= ' + " + && -$ # R -# &&J'### * ? $ #$?# #$ G? ?$' # ' #"$ / ? 0! & G# ?' + -$ $/ * /# # $ ' $ # ' '$" > $ ' $' # $* $ $ > $ - - J / $? > * / # ' 8# '# # L & / ? $-# $ $ # ' - #$ $&& /# " ' ? $ &# ' /#'#L # < 8 #&&#$ /# # $&& / + " ? + / + < $ / ? -$ # ? ?# #$ $ #$ $ $&& /# " 0 ? ? $ G # # ' + $> 0 0 ' / /# & ? + $ L G# ?' , $ $ # "$ / &$ L / $ / + - -#& # > ?$ # ? * ? - & /# " 6 $/L +# $ $0 '" / * / 0 G?#&?' + # > * ? D# "/ + ? $ # #&$ $ / # &#-$ # # ? / 0 $ #" / $ #$ $ 6# / -$ $ + ## - B)E A 8 /&&#$ /# # + # #0 '

;

D41-'4&(' :4ED15A5&F'&G -A5 2D'-2&2-5(' 2?' ':2-5(' 2&F -A5 1'&:'D2 '-C(' +5:2E5 F5+2-2+ 5 G14*&F +5B -@55& -A5 D21-'5?(' 52:A 46 @A4E '&?'?-5F 4& -A5?5 2? 641E'&G 2& '&-5G12 D21- 46 '-? 4@& E4'5-C A5 15&:A A2F &4 G14*&F @A2-5$51 641 :4&-5?-'&G -A5 D4??5??'4& 46 -A5 2D'-2&2-5(' -A5 6'1?- 46 -A5?5 D14B $'&:5?(' 2&F +C 621 -A5 E4?-' 'ED41-2&-(' 4& 2::4*&- 46 -A5 -4 ? D2'F +C -A5 &*E514*? 6 4:H? @A':A F5?:5&FB 5F 5$51C @'&-51 '&-4 '-? ?A5-515F $2 5C? 614E -A5 ?&4@.:4$515F E4*&-2'&? 46 +1*LL4 9 A515 @2? E415 *&:51-2'&-C -4 @A':A 46 -A5 D2'0-'5? -A5 -@4 4-A51 D14$'&:5? @515 E52&- -4 +5 2??'G&5F - '? ?:21:5 C D4??'+ 5 -A2- 2&G*2G5 ?4 44?5(' '& 2 E2--51 15M*'1'&G E2-A5E2-':2 D15:'?'4&(' ?A4* F A2$5 +55& *&'&-5&-'4&2

56415 4&?2 $4 F5 41F4$2 A2F :4ED5-5F -A5 :4&M*5?- 46 -A5 ?4*-A51& E4'5-C 46 -A5 H'&GF4E(' 2&F @A' 5 C'&G +56415 215&-4(' A5 15:5'$5F '&-5 'B G5&:5 46 -A5 4::*D2-'4& 46 ?5$512 D2:5?(' +4-A '& -A5 2D'-2&2-5 2&F 2?' ':2-5(' +C -A5 15&:A 5 F5-2:A5F 2 +4FC 46 -144D? 641 -A5 D14-5:-'4& 46 -A5?5 :4*&-1'5?(' 2&F 26-51 -A5 ?*115&F51 46 215&-4 E21:AB 5F -4@21F? -A5 41-A -4 :4$51 -A5E @'-A A'? @A4 5 21EC Ú ? A5 @2? &4- '& :4&F'-'4& 641 'EE5F'2-5 A4?-' '-'5?(' A4@5$51(' A5 5&-515F '&-4 &5G4-'2-'4&?

-- F)(F)@ AP '## :# $ 8 = ? &? /# #& * 0 KK
$ '# #0'# -- M F3@ # ? $-# $ $ '# '& & #' '
'#/ & * ? # # * ? 1 ? - '# # * ? -$ #L & $& # '" -$ # ' '$ #" ? ? # $ > ?$? -$ #$ / $ ' ' -$# ' ' ? $ > ? /& & ? ' -$#/ 0> $- + - #- + + ? * &D ' ? # / & * + ### -- ((@ ((B

! ! ‘ ‘

@A':A(‘ '6‘ 2--5&F5F‘ @'-A‘ &4‘ 4-A51‘ 2F$2&-2G5(‘ @4* F‘ 2-‘ 52?-‘ G2'&‘ A'E‘ -'E 5 9

D1'‘ <?-(‘ < ; ‘ U^ A5‘ D15-5&?'4&?’ 46‘ -A5‘ -@4‘ D21B -'5?(‘ 2?’ E'GA-‘ A2$5‘ +U5&‘ 5JD5:-5F(‘ @515‘ -44‘ '115:4&B :' 2+ 5‘ -4‘ 2FE'-‘ 46‘ :4ED14E'?5ℕ 2&F‘ 2‘ D51?4&2‘ :4&B 6515&:5‘ +5-@55&‘ -A5‘ 15?D5:-'$5‘ :4EE2&F51?’ '&‘ :A'56‘ 5F‘ -4‘ &4‘ +5--51‘ 2112&G5E5&-‘ -A2&‘ -A2-‘ 52:A‘ ?A4* F‘ 15-2'&‘ A'?’ D15?5&-‘ 2:M*'?'-'4&?(‘ -' ‘ 5JD ':'-‘ '&?-1*:B -'4&?’ :4* F‘ +5‘ 15:5'$5F‘ 614E‘ -A5'1‘ 15?D5:-'$5‘ :4*1-?

*-‘ &5'-A51‘ 46‘ -A5‘ -@4‘ E4&21:A?’ A2F‘ 6*1-A51‘ '&B ?-1*:-'4&?’ -4‘ G'$5ℕ 2&F‘ -A5‘ 2-A4 ':‘ H'&G‘ :4&-5&-5F‘ A'E?5 6‘ @'-A‘ 2FE4&'?A'&G‘ A'?’ G5&512‘ -4‘ D4?-D4&5‘ 2&‘ 4D5&‘ 1*D-*15‘ 2?’ 4&G‘ 2?’ D4??'+ 5(‘ -A2-‘ -A5‘ G4$51&B E5&-‘ E'GA-‘ A2$5‘ -'E5‘ -4‘ D14$'F5‘ E415‘ 5665:-*2 C‘ 641‘ A'?’ ?*DD41-(‘ 2&F‘ ?-15&G-A5&‘ '-?5 6‘ +C‘ 2 '2&:5‘ @'-A‘ 4-A51‘ *14D52&‘ D4@51?‘ *-(‘ A4@5$51‘ D2:'6':‘ E2C‘ A2$5‘ +55&‘ -A5℗‘ F'?D4?'-'4&‘ 46‘ -A5‘ G5&512 ?(‘ -A5C‘ A2F‘ &4‘ D4@51‘ -4‘ :4&-14‘ -A5‘ D2??'4&?’ 46‘ -A5'1‘ ?4 B F'51?(‘ @A4(‘ -A*?’ +14*GA-‘ '&-4‘ 'EE5F'2-5‘ :4&-2:-(‘ G215F‘ 4&‘ 52:A‘ 4-A51‘ @'-A‘ -A5‘ 6514:'-C‘ 46‘ + 44FB A4*&F?(‘ 152FC‘ -4‘ ? 'D‘ -A5‘ 52?A‘ @A':A‘ A5 F‘ -A5E‘ '&‘ -5ED4121C‘ :A5:H‘ 4?-' '-'5?’ ?44&‘ +14H5‘ 4*-‘ 2 4&G‘ -A5‘ '&5?’ 46‘ -A5‘ -@4‘ 21E'5?(‘ -A5‘ + 2E5‘ 46‘ @A':A‘ 52:A‘ &2-'4&‘ :A21G5F‘ 4&‘ '-?’ 4DD4&5&-‘ A515‘ ?55E?’ .G44F‘ G14*&F(‘ A4@5$51(‘ 641‘ 'ED*-'&G‘ '-‘ -4.‘ -A5‘ 15&:A(‘ ?'&:5‘ -A5C‘ @515‘ 2 -4G5-A51‘ +5--51‘ D15D215F‘ 641‘ @21‘ -A2&‘ -A5‘ D2&'21F?(‘ 2&F‘ 5&-515F‘ '&-4‘ '-‘ ?4‘ A521-' C‘ 2?’ &4-‘ 4& C‘ -4‘ 2??2'‘ D 2:5?’ '&‘ -A5‘ F5+2-2+ 5‘ G14*&F(‘ +*-

I‘ 9# # $‘ 6# ‘ / ‘ 6 ‘ +‘ ##‘ #0‘ JJ'##‘ &$-‘ J##‘ A‘ $‘ #‘ #0‘ #'‘ &‘ ## A $ #$ $‘ +‘ :# $‘ /# $ ‘ :‘ * ‘ 2E

=

'& D* '2(@A':A A2F +55& *&5M*'$4:2 C 2??'G&5F -4 -A5'1 1'$2 ? 9

&-A5 E52&@A' 5(-A5 D2&'?A :4*1-61*'- 5?? C5&B F52$4*15F -4 '&-515?- -A5 4-A51 D4@51? 46 *14D5 '& '-? :2*?5 A5 ED5141 2J'E' '2&(2 -A4*GA F'??2B -'?6'5F @'-A -A5 4::*D2-'4& 46 ' 2& +C -A5 15&:A(2DD5215F @A4 C 5&G14??5F @'-A -A5 61'$4 4*? 2E+'B -'4& 46 2 4E2& :414&2-'4& A5 D4&-'66 2&F A'? ?4& 25?21 41G'2 @515 : 4?5 C +4*&F -4 T'&G 4*'? +C -A5 2??'?-2&:5 @A':A A5 A2F 15&F515F -A5E '& -A5'1 E212*F'&G 5&-51D1'?5? 2G2'&?- -A5 &5'GA+4*1'&G :A'56? 46 4E2G&2 A5 4-A51 -2 '2& D1'&:5?(2 B -A4*GA F55D C '&:5&?5F 2&F F'?G*?-5F +C -A'? '&62B E4*? 2 '2&:5(?-44F -44 12"*:A '& 2@5 46 -A5 :4 4?B ?2 D4@51 @A':A A2F D 2&-5F '-? 644- ?4 6'1E C 4& -A5'1 -511'-41C(-4 46651 2&C 15?'?-2&:5 5&':5 2 4&5(?*1$5C'&G 614E A51 F'?-2&- @2-:A.-4@51(-4 +4114@ -A5 @41F? 46 5-51 21-C1(-A5 @A4 5 5J-5&- 46 -A5 D4 '-':2 A41'L4&(2DD5215F -4 A5?'-2-5 A5 15&:A 2E+2??2F41? 4*F C :2 5F 4& A51 -4 6* 6' -A5 -51E? 46 A51 2-5 -152-C @'-A -A5'1 E2?-51(2&F ?*DD41- A'E '& A'?U 2DD142:A'&G M*2115 N +*- -A2- @' C 15D*+ ':' ?2@ @'-A F'?-1*?- -A5 5&:142:A'&G 2E+'-'4& 46 A51

I P /C $ ##&?### - &#' $# 0> # " '& +L
A'##ZZZ9 # $ +'#' #0'#' 0$ 6# / > &$- J J## J#' J' A 'P '## &$- & J'##. 7 ? /, # :# ` 2222:# + '#- F4B A + ? $? # >? G ' 8#$ #0 JJ#J '&$- #' ?$?$ * ' " /& $ +$ / K $?$? 8 $ ' &?* ?# +$ #&*#"? $- $# *# /# " ?# & * & # > *D -# "G# ? ? G# ? ? &?" $ # ** &- -$ # ? " $0 &?$ $& # # $ - - / ? $ / L G?#&?- / & G$ - 0$0 > &#/ ? , $ 0 G ? # ? + & -#& $ #0

D4@516* ' &5'GA+4*1(' 2&F' ?5:15- C' @'?A5F' 2' :4*&-51B
D4'?5' E'GA-' +5' 64*&F' '&' -A5' ?*::5??' 46' 12G4&'
21-C1(' @A4' ?-4DD5F' 2-' 5&':5' 4&' A'?' 15-*1&' 614E'
aGCD-8' :-4+51' < <(' 2DD5215F' +56415' -A5' ?5&2-5('
2&F' 5ED 4C5F' 2 ' A'?' 5 4M*5&:5' '&' ?*DD41-'&G' A'?'
E2?-510?' :2*?5' '&' 4DD4?'-'4&' -4' -A5' 15&:A' 5&$4C?M'
+*-' A'?' D15??'&G' 5&-152-'5?' -4' -A5' D2&'?A' ?4$515'G&?'
-4' ?5&F' -A'-A51' ?4E5' :4ED5-5&-' D51?4&' 2?' 2' 15?'F5&-'
E'&'?-51(' ?A4@' A'?' 4@&' :4&$':-'4&' 46'-A5' :1'-':2' D4?'B
-'4&' '&' @A':A' -A5'1' 2662'1?' ?-44F 9

' A5' 5--51?' 46'-A5' ?2E5' '&-5 'G5&-' '&F'$'F*2 (' F*1B
'&G' A'?' ,4*1&5C' -A14*GA' -A5' ' 2&5?5(P' 6' 5F'
@'-A' -A5' E4?-' G 44EC' 6415+4F'&G?' 46'-A5' -51E'&2-'4&'
46' 2' :4&-5?-' 641' @A':A' -A5' D2&'21F?' @515' ?4' '&B
F'66515&- C' D14$'F5F'M' @A' 5' -A5' @A4 5' &41-A' 46' -2 C

I' $+' 6# '/': # ' +' ?'G ?>' C' > '- 0$L
###'-'4(@ A +0 ':# #K' 0>' *' '$ ' && &'$+ '"
+' #' #0' '#' A' ' $ >' ?' / ' $ #'$ ' 0
-' -# ' -' &&JJJ'###'&&J' X' $ >C' 'G ' +$ >'
&& ## *' ? +'$// /' '0 ?' L
?#'+$>'$-- $' $ " '& L /# $ /'$ /' $0 $' ?'* + '
#/ # '" ?$' K' $ K'/' ? G ' 'G$' #" $ ' *' ? '
$' : "$'G#' ? '<$'- ' *' $ # ' $ " $" ' # ' G?#&?' ? >'
G? +'8 K$ '/' '# /'G # ' G ' G # ' $ >' - $>L
U' ' " #'&0 '@ $0# ' * >'$ / ' ' ?#'#' ' *'?#'
' /' " $' -+/ &#$'A ' ' -# ' +# /# '" ?', ' *'
1+ >' /#/' ' /' + &?' =' ? ' - +# ' ' # - ' ? +'
- ' '? ' '$*$0 'a' /'*# =' *$# ?* >' ' ? ' ? 0$ /' ? '
/$ & ' $&# $ /' $"$# ' & $# /' $ /'*$+#$' ' '
+ ' J-#&# >' !' +0J/ ' *' ?#'& - / &' $** /' $'
' : &#$' ' ', $' *#&#' # =' - $ # '" J$+- ' *' ?'- $'
'#B' + >'0# ' B & + '- / ' # #+$&>' ' G?#&?' ? ' ' L
'$ R' ; # & $" $ ' ' #" ' '& $ >' ' ?' $'
$'2', # &'4' /#$'((.' $L #** ' *' -$ # ?' #, '
>'$/+# '?#'- / &'0 ' 0L $/+# /' + ' *' $ # '" $ /'
! & ' ?#' #" $ &' *' $ # ' $' - 0# >' $' ? # '& ' G# ? '
/ *#&# &>' ? G ' ' ? # ' # /# # & # ' *' $ D' -'&&JJJ

@2?' 2 '$5' -4' -A5' +*?- '&G' D15D212-'4&?' 46'-A5' 15&:A(' @A4' 4*F C' $2*&-5F' -A5'1' '&-5&-'4&' 46' F1'$'&G' -A5'1' 5&5EC' &4-' E515 C' 4*-' 46' 2D 5?(' +*-' ':' C' '-?5 6 9

4*'?' Z ' ?*D51'&-5&F5F' -A5?5' D15D212-'4&?' '&' D51?4&(' 2&F(' '&' 41F51' -4' +5' &521' -A5' -A52-15' 46'4D512B -'4&?(' :14??5F' -A5' D?(') * C' < ;(' 2&F' -44H' *D' A'?' M*21-51?' 2-' ?-' ' -' 5&G-A(' 2 ' +5'&G' '&' 152F'&5??(' A5' +14*GA-' -A'&G?' -4' 'E E5F'2-5' '??*5(' +C' :4E E2&FB '&G' A'?' G5&512 ' -4' D14: 2'E' @21' 2-' 4&:5' 2G2'&?-' -A5' D2&'21F?(' *& 5??' -A5C' 2+2&F4&5F' -A5' 2D'-2&2-5' '& 64*1.2&F.-@5&-C' A4*1? 6

A5' 15&:A' 641:5?' '&' 2D 5?' 2E4*&-5F(' 2::F1F'&G' -4' -A5'1' 4@&' ?-2-5E5&-?(' -4' < ' E5&.2-.21E?(' ' 15&:A' 2&F' 4E+21F(' 2&F' ' @'??' '&62&-1C(' '& 2FF'-'4&' -4' -A5' 52D4 '-2&' 5$'5?' 12'?5F' +C' -A5' &B G5$'&' 41F?' -A14*GA4*-' -A5' H'&GF4E ' A5' :4E E2&F' @2?' '&-1*?-5F' -4' -A5' *H5' 46' 5E4*1?(' 2' +12$5' 2&F' :A'$2 14*?' C4*&G' &4+ 5E2&' 46' -A5' 2&:'5&-' A4*?5' 46' 1E2G&2:(' @A4E' 62E' C' :4&&5J'4&?(' E415' -A2&' -2B 5&-?(' A2F' 12'?5F' -4' -A5' D51' 4*?' D4?-' 46'$':514C(' 4$51' -A5' A52F' 46' -A5' $5-512&' F0 *+'G&C ' A5' 2--51'@4* F' A2$5' -A14@&' *D' A'?' :4E E'??'4&' '&' F'?G*?-(' +*-'641' -A5

I' !' 8$ #V' $>' $ >' #' ?$ &' ' # +' ? +# +' -$ =' $' ' + ' +$ D$0 ' * ' '#, ' + + #' ' $"" ' " ?' *' J- # ' ?$ ' L - & $ ' #?#' ' =' "$ &' *' $ # #>'R'* + ' $ =' " &## $/#&$ ' J +# $, ' '# ' # +#&# +' #' +#=' ' $' - #/#$ J' , ' #L $ ' - $, ' #/' #O# * ' &# #$' 0 $& $ ' ' #=' *$&# #+ +' " +' +' ' +# J - / # $ R' -# ' # ' # # ' # , # ' '#- '& +' &&J #'M / - #&$ ' J &# ' - ' $!#=' *' ' '##'&?' '### A 8#=' &#$' # ' $ #$+' : ' +# # $ ' #0 JJ#J &$- #' A 8 #&L # " ' # $' #" ' # ' &#$ /# #' #0' : ' --' PP)(' F)@ A' : ' - 0# #+&' '# &#$+ $&& #' #$ # ' -' B2

15E4&?-12&:5?' 46' A'?' ?4$515'G&(' @A4' D15$2' 5F' 4&' A'E' -4' 15E2'&' @A515' A'?' :4*&?5 ?' @515' E415' -A2&' 5$51' &5:5??21C' -4' ?*DD C' -A5' '&5JD51'5&:5' 46' -A5' C4*&G' :4E E2&F51' A5' ,52 4*?C' 2&F' @' 6* &5??' 46' -A5' 2--51(' A4@5$51"(' F5652-5F' -A5?5' '&-5&-'4&?(' 2&F' -A5' 1-''?*&F51?-2&F'&G' 46' -A5' :A'56?(' 5J-5&F'&G' -4' -A5'1' 64 4@51?(' 5F' -4' 2' 62-2 ' @2&-' 46' :4&:51-' '&' -A5'1' E4$5E5&-?

'-A' -A5?5' 466':51?' @515' *&'-5F' ?4E5' 46' -A5' +5?-' 2&F' +12$5?-' 46' -A5' 15&:A' :A'$2 1CM' 2E4&G' @A4E' E2C+5' &4-':5F')2:M*5?' F5' A2+2&&5?(' E415' :4EB E4& C' H&4@&' 2?' -A5' '15' F5' 2' 2 ':5(' 2' 62$4*1'-5' 46' 4*'?' Z ('2&F'@5 ' 5&-'- 5F'-4' +5' ?4' +C' A'?' F5?51-?' M' 4*'?' F0 1?M $5?' F0 5G15(' +14-A51' 46' -A5' 15:C' @A4' G2'&5F' ?4' E*:A' 15&4@&' '&' -A5' @21?' 46' A21 5?' M' 2&F' '5115' F5' 2C21F(' -A5' H&'GA-' R' ?2&?' D5*1' 5-' ?2&?' 15D14:A5(K' @A4' @2?' -A5&' 5&-51'&G' 4&' -A5' A4&4*12+ 5' :21551' '&' @A':A' A5' ?55E5F' -4' 152 'L5' 2 ' -A5' 'E2G'&21C' D5165:-'4&?' 46':A'$2 1C 9

4-@'-A?-2&F'&G' -A5' ?E2 ' 2E4*&-' 46' -A5' 15&:A' 641:5(' -A5' 152-' 2D-2'&' @2?' '&' &4' :4&F'-'4&' -4' :4D5' @'-A' '-' 5' A2F' 15:5'$5F' &4' 15'&641:5E5&-?' 614E' A4E5' ?'&:5' A5' 6'1?-' 2&F5F' '&' 2 2+1'2 ' '?' '-- 5' :41D?' 46'$5-512&?' @2?' F5?-'-*-5' 46' D14D51' : 4-A'&G' 2&F' 5M*'DE5&-(' 2&F' -A5' 21G5' 211521?' F*5' -4' -A5E' E2F5

I' 8 #&&#$ /# #' #0' ' ' -' &$- $# ' + # /' # ' ? ' J ' 'A ' ' #'&?' '8$#=' # ' ?#' $/+# $0 ' "$ >' *' $ /' #'$# ' # #' ' --'FF2' $ # $' - $# ' ' ' ' A FF4 A 8 $# ' -'2B5 +'##'Y'###' :# '/ '6 + + ' $ + ' ?$' # / & /' D &? ' *' + ' *' ? ' &?

-A5' -5&*15' 46' -A5'1' 4+5F'5&:5' 5J-15E5 C' D15:21'4*?9'
'&:5' 2662'1?' +5G2&' -4' 2??*E5' -A5'1' D15?5&-' E5&2:'&G'
2?D5:-(' A5' A2F' +55&' +*?' C' 4::*D'5F' @'-A' F12@'&G'
-4G5-A51' -A5' F5-2:AE5&-?' D4?-5F' '&' $21'4*?' D21-?' 46'
2 2+1'2(' 2&F' :4&:5&-12-'&G' -A5E' 4&' -A5' -4@&' 46'
-5 2' '&' -A5' 2?' ':2-5(' @A515' A5' A2F' 5?-2+ '?A5F' A'?'
4@&' M*21-51?' 5' A2F' 2?4' 4D5&5F' 2' :4115?D4&FB
5&:5' @'-A' -A5' +214&?' 46' -A5' 12G4&5?5' 62:-'4&(' @A4'
@515' E4?-' &*E514*?' 2?' @5 ' 2?' E4?-' D4@516* ' '&' -A5'
&41-A51&' ?5:-'4&' 46' -A5' H'&GF4E(' @A':A' A2F' +55&'
2??'G&5F' -4' -A5' 15&:A' 5' @2?' D21-':* 21 C' 641-*&2-5'
'&' G2'&'&G' 4$51' -A5' -@4' 4 4&&2?(' @A4?5' 2*-A41'-C('
D4@516* ' :4&&5J'4&?(' 2&F' 21G5' E' '-21C' 5JD51'5&:5('
D14$5F' 46' '&5?-'E2+ 5' $2 *5' -4' A'E 6

'-A' 2 ' -A5' 15?4*1:5?' A5' :4* F' :4EE2&F(' A4@B
5$51(' 4&?2 $4' 64*&F' A'E?5 6(' 2?' +5641 5' &4-':5F(' *&B
5M*2 ' -4' -A5' :4&-5?-(' -A4*GA' '-' @2?' 'ED4??'+ 5' -4'
F5651' '-(' 26-51' -A5' D515ED-41C' ?*EE4&?' 46' -A5' 15&:A'
$':514C' -4' ?*115&F51' -A5' 2D'-2&2-5' 4' -A'?' A5

' $ > ⍰ ' -# ' $ ' ?# '
& # # ' $ ' *# /' G# ?' J- $L
'$ " + '$ /' $ # ' '
? ' ' #" ' 0 ""# "' ? +' '
' * +' ? # ' $-$?>' $ /'
$D ' + $ ' ' & ' ? ' G$L
' # "' $** & # ' *' : #& ' $ '
G ' $ ' ' /' + ' ** & $ '
$#/' ' ? # ' $ #$ ' - ' L
/# $ /' # /' ' ? ' *# ' *'
? ' "" # ⍲ 0 ' ? G /'
$' $ " ' # #0# # >' ' ? '
$
' 9 # $ ' 6# ' #0'#' ' &$-'
J## ' J' 'A ' ' P '## :# ' -'
!"

- ' $'# ' -$ #& L
$ ' G$ ' /# # " # ? /' ' >'
* ' ?# ' +# # $ >' &# & ' 0 ' ?# '
* / '* ' '$ /' ? ' $ '
*' G?#&?' ? ' # ' & + + + $ /'
0>' # $0 &?# $ ' $' + #*#& '
-$ ' $ $' $ ' + '
'### ' - ')) ⍲ / ' 2)3(.' $ '
8# '# '?$ '# / & /'?#+'$+ "'
? ' **#"# ' *' # # ' +
G? '# ' + ' 0 ' & * / ' $ '
+ '# / 0 /' # ' ?# ' G D' '
? ' ? ** /' *' ? ' ?# #$ ' ?$ '
? ' $ # ' "' :# ' M'
#0 ' : ⍲ / ' * ' $ # ' 2@)3

! ! ' '

&A5?'-2-'&G C' 2&?@515F(' -A2-' R' -A5' 2D'-2&2-5' +5B 4&G5F' 46'1'GA-' -4' A'?' 4@&' E2?-51(' 2&F' -A2-' @'-A' -A5' + 5??'&G' 46' 4F' A5' @4 F' E2H5' G44F' '-?' F565&:5' 2G2'&?-' -A5' 15&:A' H'&G(' 41' 2&C' 4-A51' @A4' ?A4* F' '&$2F5' '- K

4-@'-A?-2&F'&G' -A5' +4 F' 614&-' D*-' 4&' A'?' 2662'1?(' A4@5$51(' A5' F'F' &4-' :A44?5' -4' 2+'F5' -A5' 2??2* -' 46' -A5' 15&:A' '&' A'?' D15?5&-' D4?'-'4& ')* C' < ; ' 5' '&?-2&- C' F15@' 466' @'-A' -A5' G152-51' D21-' 46' A'?' 641:5' -4' 21 5-2(' 2' 641-'6'5F' ?52D41-' 4&' -A5' :4&6'&5?' 46' D* '2(' '&' -A5' F1'2-':(' -A5' ?'-*2-'4&' 46' @A':A' @4* F' 5&2+ 5' A'E' 5'-A51' -4' 15:5'$5' ?*DD '5?' 614 E' 2+142F(' 41' -4' 5665:-' 2' 15-152-(' '6' &5:5??21C(' 4&' +421F' -A5' D2&'?A' 6 55-(' @A':A' ?-' ' H5D-' -A5' :42?-' 46' 2 2+1'2' A5' 15E2'&F51' 46' A'?' 21E C' A5' F'?-1'+*-5F' '&' 21'(' &F1'2(' 2&4?2(' 2&F' 4-A51' 2F,2:5&-' -4@&?N' @A515' A5' :4&B 6'F5&- C' A4D5F' -4' E2'&-2'&' A'E?5 6'-' ' -A5' 211'$2' 46' # * & + ' G?#&?' A5' ?4 ':'-5F' '&' ? ' (' - L '&G' E2&&51' 614 E' D2'&' 2&F' ':' C(' ?A4* F' 5&2+ 5' A'E' -4' -2H5' -A5' 6'5 F' 4&' E415' 5M*2' -51E?' 2G2'&?-' A'?' 2F$51?21C 9

A5' 15&:A' 466':51?(' '&' -A5' E52&' -'E5(' @515' F'B $'F5F' '&' 4D'&'4&' 2?' -4' -A5' +5?-' E4F5' 46' :4&F*:-'&G' -A5' @21' 4E5' @515' 641' +5?'5G'&G' 21'(' A5 F' +C' -A5' ' *?-1'4*?' 2&F' *&641-*&2-5' ?2+5 2' 46' 12G4&'N6

1' ' '##'&?''### A =' /' &&$ # #' # ' ?#' G?#+ #&$' $'* '2E A ? '/ 'B ' $=' $ # ' *' ? ' N' $"" $" #'/# $ =' -# '&$-'J ## A + + ' + ' $ C' '&$ '? ' ? ' + ' L ###'-'@(2 * $ '* +$ ' ' & /'?$/' ' ?#' 0 $ #* ' $ /' ?#"?=' '? '*$? ' -? ' '$ /' -# # /' $/>' G? ' *$ ' ?$? ' ? 0$ /' 8$ $KK ' * K$

' ;

-A51?(' '&' 2' E 415' :A'$2 14*?' ?D'1'-(' 4DD4?5F' -A5' 2-B -2:H' 4&' 2' D 2:5' F565&F5F' +C' 2' 65 E 2 5(' 2&F' 2F$'?5F' 2&' 'E E 5F'2-5' 2??2* -' 4&' 21 5-2' '-?5 6(' @A4?5' 4 F' 2&F' F' 2D'F2-5F' @41H?' E 'GA-' 52?' C' +5' 641:5F(' '6' '-' F'F' &4-' 2-' 4&:5' ?*115&F51' A5' *H5' 46' 5E4*1?(' F5B :'F'&G' 4&' 2' E 'FF 5' :4*1?5(' F5-51E'&5F' -4' '&$5?-' -A5' 2?-.E5&-'4&5F' -4@&'N' 2&F(' :*--'&G' 466'2 ' :4E E*&'B :2-'4&' @'-A' -A5' ?*114*&F'&G' :4*&-1C(' -4' 15F*:5' '-' +C' 15G* 21' + 4:H2F5' A'?' D 2&' @2?' *&M*5?-'4&2+ C' -A5' 52?-' 5 'G'+ 5' 46' 2 (' 2?' '-' @4* F' 2 4@' -'E 5' 641' -A5' 5&-A*?'2?E' 46' -A5' 15&:A(' -A5') ' (&' 2?' '-' @2?' :2 5F' '&' -2 C(' @A':A' :211'5F' -A5 E' $':-41'B 4*?' 4$51' ?4' E 2&C' 4+?-2: 5?(' -4' 5$2D412-5(' @A' 5' '-' +14*GA-' '&-4' D 2C' -A5' ?-51&' 15?4 $5(' -A5' :2 E(' *&B 6 '&:A'&G' 5&F*12&:5(' @A':A' F'?-'&G*'?A5F' -A5' D2&'?A' ?4 F'51 9

&5' 46' -A5' 6'1?-' 4D512-'4&?' 46' -A5' 15&:A' $':514C' @2?' -A5' ?'5G5' 46' 2&4?2(') * C' < ; (' < ;N' 2' ?-14&G C' 641-'6'5F' D 2:5' @5?-' 46' 21 5-2(' G211'?4&5F' +C' ?'J' A*&F15F' D':H5F' E5&' *&F51' -A5' 5&G'&551' 5F14' 2B $2114' A5' F565&:5' 46' -A5' D 2:5' ,*?-'6'5F' -A5U 15B D*-2-'4&' 46' -A'?' G2 2&-' ?4 F'51' 5' +52-' 466' -@4' ?*::5??'$5' 2??2* -?' 46'-A5' 5&5E C(' 5F' 4&' +C' 2C21F(' 2' 2 ':5(' 2&F' -A5' 6 4@51' 46'-A5'1' :A'$2 1C' 5' A2F' D15D215F' -4' ?*?-2'&' 2' -A'1F(' 15?4 $5F' -4' +*1C' A'E?5 6' *&F51' -A5' 1*'&?' 46' -A5' -4@&' 12-A51' -A2&' ?*115&F51N

/ #' '* +' ? #' ? '0>' ? ' P '##':# ' + '#' -'F4)=' &?' G?# ' ? ' ' # ' L A # #& #$ /# #' #0' ' ' --' F3F' +$# /' # ' &$- #'# >' # ' ? #' F34 A 8$ #0$>' + '##' #0' J#J' ?$ / ' 4 G / ' ? >' L &$-' J#' ' A ' $ > ' - ' ' /' * +' $&& + $ # "' G' -# ' -'F(5 A +$ / K' ' G ' '? ' / ' /'? $/ &$-' & J'###

! ! ' '

+*-' 4&?2 $4(' *&2+ 5'-4' 15 '5$5' '-(' :4E E2&F5F' A'E' -4' E2H5' -A5' +5?-' -51E?' A5' :4* F(' ?2C'&G(' !' -A5' D 2:5' @2?' 46' 621' 5??' $2 *5' -A2&' -A5' '$5?' 46' -A5' +12$5' E5&' @A4' F565&F5F' '-' 2$2114' 64*&F' &4' F'66':* -C' '&'4+-2'&'&G' 2&' A4&4*12+ 5' :2D'-* 2-'4&N 2&F' -A5' '-- 5' G211'?4&(' F@'&F 5F' -4' 4&5.-A'1F' 46' '-?' 41'G'&2' &*E+51(' E21:A5F' 4*-(' -A14*GA' -A5' 5&5EC0?' :2ED(' @'-A' :4 4*1?' 6 C'&G' 2&F' E*?':' D 2C'&G(' 2?' '6' '&' F5B 1'?'4&' 46' -A5' D4@516*' 641:5' '-' A2F' ?4' &4+ C' H5D-' 2-' +2C 9

6-51' -A5' :2D-*15' 46' 2&4?2(' 0 *+'G&C(' @A4?5' E'?*&F51?-2&F'&G' @'-A' 5E4*1?' ?-' ' :4&-'&*5F(' @2?' F5?D2-:A5F' @'-A' 2' ?E2 '641:5' '&-4' -A5' ?4*-A(' -4' 4$51B 1*&' -A5' -@4' 2 2+1'2?' A5' $':514C(' '&' -A5' E52&' @A' 5(' A2$'&G' 61*'- 5?? C' 2--5ED-5F' -A5' 15F*:-'4&' 46' ?5$512' ?-14&G' D 2:5?' A5 F' +C' -A5' D2&'21F?' '&' -A5' &5'GA+4*1A44F' 46' 21 5-2(' 5&F52$4*15F' -4' ?-12'-5&' -A5' G211'?4&' -A515' +C' F5?4 2-'&G' -A5' ?*114*&F'&G' :4*&-1C(' 2&F'?@55D'&G' '-A5' 6 4:H?' 2&F' A51F?' @A':A' G12L5F' '&' '-?' 651-' 5' D2?-*15?' A5' D2&'21F?(' A4@B 5$51(' F'F' &4-' 15E2'&' 'F 5' @'-A'&' -A5'1' F565&:5?N +*-(' ?2 C'&G' 4*-' '&' ?E2 ' F5-2:AE5&-?(' 4::2?'4&2 C' 15B -1'5$5F' -A5' ?D4'' 614E' -A5' A2&F?' 46' -A5' 5&5EC(' 41

1' ? #&$' / ' 8 ' $-'&$-' ?' / * &' *' $ $' #&# ' $' J '## A 9 # $' + '#' #0 #' '&$-' ? $ >' "# +'* +'P $ '/0 =' J#J A 'P >##' : # ' + '#' -' ' ? ' >$'?# # " $-? ' *' F(2'A' ' '##' &?'J# A' #'H ' U'P ' '' J'/ ' ' $ > ' -# '&&J ## -$' +$' ? #, ' + ' ' ' $ > ' $> ' ?$ ' ? ' 0# *$#& ' / ' -$#" ' ' -$ #$ / ' +$ &? /' ? "?' ? ' ? > ' +$#' /# ' , ' - '' =' + >0' &$+ -' ? # "' U' =' ' / * & ' / #0 ' $ #' -$ $' -$ $' :#'$' -$ $%V' $ " '? $0 R' ?'J# 0#' -.' ? #' "$ $ >' #

2&&4C5F' A'E' @'-A' -A5' F5?* -41C" 2--2:H?((2E+*?B :2F5?(2&F' 4-A51' '115G* 21' E4$5E5&-?' 46' ;) ?' @216215('&' @A':A' -A5' 15&:A' @515' :4ED212-'$5 C' *&D12:-'?5F 9

A5' @21' &4@' +5G2&' -4' 2??*E5' E2&C' 46' -A5' 14B E2&-':' 652-*15?' 46' -A2-' 46' 12&2F2' A5' H&'GA-?' 4&' +4-A' ?'F5?(&4-' :4&-5&-' @'-A' -A5' *?*2' E''-21C' 15&:4&-15?(F56'5F' 4&5' 2&4-A51"-4',4*?-?' 2&F' -4*1&5C?(52G51' -4' 5?-2+ '?A' -A5'1' D14@5??" '&' -A5' &4+ 5' 5JB 51:'?5?' 46':A'$2 1C' &5' 46' -A5' E4?-' 15E21H2+ 5' 46' -A5?5' E55-'&G?' -44H' D 2:5' +5-@55&' 5 5$5&' D2&'?A' 2&F' 2?' E2&C' 15&:A'H&'GA-?('&' :4&?5M*5&:5'46'?4E5' F'?D212G'&G' 15E21H?' 46' -A5' 2--51' 4&' -A5' :2$2 1C' 46' -A5'1' 5&5E'5?(@A':A' -A5C' 266'1E5F' '&651'41' -4' -A5'1' 4@&' A5' 5&5-'2&?' G2$5' -A5' D21-'5?' 2' 62'1' 6'5 F' 46' :4E+2-' '&' -A5' &5*-12' -511'-41C' *&F51' -A5'1' 4@&' @2 ?' 46' 12&'' ' G2 2&-' 2112C' 46' @5 .21E5F' H&'GA-?' 46' +4-A' &2-'4&?' G*21F5F' -A5' '?-?(2&F' E2'&-2'&5F' -A5' 41F51' 46' -A5' 6'GA-' &' -A5' 2DD4'&-5F' F2C' 5D-' ; (' < ;(' -A5' :A2ED'4&?' 2DD5215F' '&' -A5' 6'5 F(21E5F' 2-' 2' D4'&-?(@'-A' A41?5?' 1':A C' :2D21'?4&5F(2&F' +21F5F' 41' :4$515F' @'-A' ?-55' D2&4D C' 'H5' -A5'1' E2?-51?' A5' 1446?' 2&F' +2-- 5E5&-?' 46' 12&'' @515' :4$515F' @'-A' ?D5:-2-41?N' @A' 5' -A5' '?-?' @515' -A14&G5F' @'-A' -A5' 15&:A' 2&F' D2&'?A' :A'$2 1C(52:A' ?-2H'&G' '&' ?4E5' F5G155' -A5' &2-'4&2' A4&4*1' 4&' -A5' '??*5' 46' -A5' :4&-5?-' E4&G' -A5' 2?-' '2&?' @515' '5G4' F5' 215F5?(2&F' '5G4' F5' 512(@A' 5' -A5' G44F

S' $'/' ' $$&# ' '&$-'& J#J A $'* T2E A ? ' / '8 ' $-'&$-' J'#

! ! ' '

H&'GA-' 2C21F' @2?' E4?-' :4&?D':*4*?' 4&' -A5' 4-A51' ?'F5

?' -A5' -1*ED5-?' ?4*&F5F' -A5' 2DD4'&-5F' ?'G&2 (' -A5' A4?-' 5' D21-'5?' 1*?A5F' -4' -A5' 5&:4*&-51' A155' D2&'21F?' @515' +41&5' 614E'-A5'1' ?2FF 5?' +C'-A5' 1*F5B &5??' 46' -A5' ?A4:H(' 2&F' 64*1' 46' -A5'1' 2&-2G4&'?-?(' A41?5?' ? 2'&' A5' 6'GA-(' @A':A' +5G2&' 2-' -5&''&' -A5' E41&'&G(' @2?' &4-' -4' +5' D14-12:-5F' +5C4&F' ?*&?5-' 4&G'+5615.-A2-'A4*1(' 2!'-A5' 15&:A'?2$5'-@4(' 4&5D6' -A5E'-A5' A5$2 '51' 2C21F(' A2F' +55&' F'?E4*&-5FW 2&F' -A5'1' A41?5?(' 2-' @A':A' -A5' D2&'21F?' A2F' 2'E5F' E415' -A2&' 2-' -A5' 1'F51?(' F'?2+ 5F' 41'? 2'&' A5' D2&'21F?(' ?5$5&' 46' @A4E' @515' ?-' ' 4&' A41?5+2:H(' D15??5F' A21F' 4&' -A5'1' 2F$51?21'5?(' 52$'&G' '-- 5' F4*+-' 46' -A5' 641B -*&5' 46' -A5' F2C' A5' 2--51(' A4@5$51(' '&-15&:A'&G' -A5E?5 $5?' +5A'&F' -A5' :21:2??5?' 46' -A5'1' F52F' A41?5?(' E2F5' G44F' -A5'1' F565&:5' 2G2'&?-' -A5' D2&'21F?(' @A4' '&' $2'&' -1'5F' -4' ?D*1' -A5'1' -511'6'5F' ?-55F?' 4$51' -A5' +211'51' &' -A'?' @2C' -A5' 6'GA-' @2?' D14-12:-5F' -' ' ?*&?5-(' 2&F(' 2?' +4-A' D21-'5?' :4&-'&*5F' -4' H55D' D4?B ?5??'4&' 46' -A5' 6'5 F(' -A5' D2 E' 46' $':-41C' @2?' 2FB ,*FG5F' -4' &5'-A51(' @A' 5' +4-A' @515' D14&4*&:5F' -4' A2$5' F5E52&5F' -A5E?5 $5?' 'H5' G44F' 2&F' $2 '2&-' H&'GA-? 9

1' ? ' / ' 8 ' $-#$ ' /#** 'G$> '$' ? '$ ' $L
&$-' ### A ' '##'&?'JJ'#' $ '<' $ /' ?# ' G# ? $ /L
A MP '# :#$ ' --'F43'F45 A' # "' #' G$' * "?' #' ? ' - L
B+' /' $>$ /' &?'JJ###'$-' &' *'$' & G/' *'G# '
' / ' + ' ' +'J' A' G?' ?$/' ?# "' ' / ' 0 '
$ + ' +'?#' # &' JJ'? D' ' $ /' 'G?$'-$ /'
?# '& 0 $ /' >' # ' 0 * ' ? #' > ' ?' >'
&$ ' $ /I'$ ' ?' / $# ' *' *$& ' #' G?#&?' $ ' $"ʒ ' $ '
?'$& # ' $ ' /'#'$'+$ > ?$' ? 'G$' &?' +$=

A5' -4*1&5C' +5'&G' 5&F5F(' -A5' :4E+2-2&-?' E5-' '& -A5' :5&-15' 46' -A5' '?-?(' 2&F' 5E+12:5F' 52:A' 4-A51' '& -A5' -1*5' :4ED2&'4&?A'D' 46' :A'$2 1C(' R' E2H'&G' G44F' :A551' -4G5-A51(K' ?2C?' 2&' 4 F' :A14&': 51(' +56415' -A5C' ?5D212-5F' A5' 152-' 2D-2'&' @2?' &4-' ?2-'?6'5F' @'-A' -A5' '??*5' 46' -A5' 6'GA-' R' 5' A2$5(' 2-' 52?-(K' ?2'F' 4&5' 46' A'?' :A2ED'4&?(' F'?D14$5F' -A5' -2*&-' 46' -A5' 15&:AE5&(' 2&F' ?A4@&' 4*1?5 $5?' 2?' G44F' A41?5B E5&' 2?' -A5C K' R' ' ?5&-' C4*' 641' +5--51(K' :4 F C' 15B -41-5F' 4&?2 $4 9

' E415' -12G':' -51E'&2-'4&' +565 ' 2' :4E+2-' ' '

' +5-@55&' -A5' A5$2 '51' 2C21F' 2&F' 2' D2&'?A' :2$2 '51(' &2E5F' 4&?4' F5' 4-4E2C41(' @A4' A2F' 2:B :*?5F' -A5' 641E51' 46' *&:4*1-54*?' -152-E5&-' 46' A'E' @A' 5' A'?' D1'?4&51' 2C21F' F5&'5F' -A5' :A21G5(' 2&F' F56'5F' -A5' D2&'21F' -4' D14$5' '-' '&' ?'&G 5' 6'GA-' 4& A41?5' 41' 4&' 644-(' 2?' A5' +5?-' 'H5F' 4-4E2C41(' 2@215' 46' A'?' 2&-2G4&'?-0?' *&:4EE4&' A41?5E2&?A'D(' D15651B 15F' -A5' 2--51' 2 -51&2-'$5

5+' ;(< ' -' -A5' F2C' 2&F' A4*1' 2DD4'&-5F(' -A5' -@4' H&'GA-?' 5&-515F' -A5' '?-?(' 21E5F' @'-A' ?@41F' 2&F' F2GG51(' 2&F' ?A52-A5F' '&' :4ED 5-5' A21&5??M 2 -A4*GA(' @'-A' 2' F5G155' 46'-5E51'-C' *&*?*2 ' '& -A5?5' :4E+2-?(' -A5C' @415' -A5'1' $'?41?' *D ' 4-A' :4E+2-2&-?' H&5 -' F4@&' '&' ?' 5&-' D12C51' 641' 2' 65@' E4E5&-?(' 2&F' -A5&(' 1'?'&G' 2&F' :14??'&G' -A5E?5 $5?(' 2F$2&:5F' ?-12'GA-' 2G2'&?-' 52:A' 4-A51M !' -A5' G44F' H&'GA-' 2C21F(K

+ ' $ /' ?$ ' # ? ' -$ >']' ' 0# -'A' ; # =0 "$# /' ? '$/'$ $" ' '+ &?' $ $' :#/$ ' + '##' -'FB4 * '?# >%

?2C?' 12&- E58' R' E4$'&G' 2?' 'GA-' 46' ?-5D' 2?' '6' A5'
@515' 2+4*-' -4' 52F' ?4E5'62'1' 2FC' F4@&' -A5' F2&:5K'

A5' D2&'21F' @2?' 46'2' 21G5' 2&F' D4@516*'612E5(
2&F' 5&F52$4*15F' -4' :1*?A' A'?' 5&5EC' +C' @5'GA-' 46'
+ 4@?(41' -4' : 4?5' @'-A' A'E' 2&F' +1'&G' A'E' -4' -A5'
G14*&F' A5' 2--51(&2-*12 C' '&651'41' '&' ?-15&G-A(
@2?' 15&F515F' ?-' ' @52H51' +C' 2'65$51(614E' @A':A' A5'
A2F' &4-' 5&-'15 C' 15:4$515F' 5' @2?' E415' 'GA-' 2&F'
2G' 5' -A2&' A'?' 2F$51?21C(A4@5$51M 2&F'?*D51'41' F5JB
-51'-C' 5&2+ 5F' A'E' &4-' 4& C' -4' D211C' A'?' 5&5EC0?'
?-14H5?(+*-' -4' F52' A'E' 4::2?'4&2 C' 4&5' 46' A'?' 4@&(
@A' 5' A5' ?415 C' F'?-15??5F' A'E' +C' -A5' 12D'F'-C' 46' A'?'
E4$5E5&-?' -' 5&G-A(2?' -A5' D2&'21F' @2?' ?4E5B
@A2-' -A14@&' 466' A'?' +2 2&:5' +C' 2&' ' .F'15:-5F' + 4@(
2C21F' ?-1*:H' A'E' ?4' ?A21D C' 4&' -A5' G41G5-(-A2-' '-'
G2$5' @2C(2&F' -A5' ?@41F' 5&-515F' F55D' '&-4' A'?' -A142-'
1'4?' @'-A' -A5' 2G4&C' 46' A'?' @4*&F(4-4E2C41' :4 .'
" 5:-5F' 2 ' A'?' ?-15&G-A' 641' 2' 2?-' ?-1*GG 5(2&F(G12?DB
'&G' A'?' 2&-2G4&'?-' '&' A'?' 21E?(-A5C' +4-A' 14 5F' '&' -A5'
F*?-' -4G5-A51' 56415' 5'-A51' :4* F' 5J-1':2-5' A'E?5 6(
-A5' M*':H.5C5F' 2C21F(@A4' A2F' 15-2'&5F' A'?' D4&'21F'
'&' A'?' 56-' A2&F' F*1'&G' -A5' @A4 5' :4E+2-(@A' 5' -A5'
D2&'21F0?' A2F' 15E2'&5F' '&' A'?' +5 -(F14$5' -A5' ?-55'
@'-A' ?*:A' :4&$* ?'$5' ?-15&G-A' *&F51' A'?' 5&5EC0?' 5C5(
-A2-' '-' D'51:5F' M*'-5' -A14*GA' -4' -A5' +12'&' 6-51'
-A5' ,*FG5?' A2F' 2@21F5F' -A5' A4&4*1?' 46' -A5' F2C' -4'
2C21F(-A5' E'&?-15 ?' 2?' *?*2' +5G2&' -4' D4*1'641-A'
-1'*EDA2&-' ?-12'&?' '&' D12'?5' 46' -A5' $':-41M +*-' -A5'
G44F' H&'GA-' :4EE2&F5F' -A5E' -4' F5?'?-(2&F(A2$'&G'
6'1?-' D14?-12-5F' A'E?5 6' 4&' A'?' H&55?' '&' G12-'-*F5' 641

A'?' $': -41C(' @2 H5F' ? 4@ C' 4 * -' 46' -A5' '?-?(' 5JD15??'&G'
2' @'?A' -A2-' -A5' : 4 E + 2-' A2F' A2F' 2' F'66515&-' -51 E '&2B
-'4&(' ?4' -A2-' A'?' A4&4 * 1' A2F' +55&' ?2$5F 9

&' -A5?5' ,4 * ?-?' 2&F' -4 * 1&5C?(' F5?: 1'+5F' @'-A' ?*6B
6': '5&-' D14 'J'-C(' + * -' '&' 2' -1 * C' A521-.?-'11'&G' -4&5(' +C'
-A5' : A14&': 51?' 46' -A5' F2C(' @5' E 2C' F'?: 51&' -A5' 2?-'
G 52 E ?' 46' -A5' 'GA-' 46' : A'$2 1C' @A': A' ' * E '&5F' -A5'
F21H&5??' 46' -A5' E 'FF 5' 2G5?' M' 2&F(' 2 -A4 * GA' 14 * GA' '&'
: 4 E D21'?4&' @'-A' -A5' D2?-' E 5?' 46' E 415' D4 '?A5F' -' E 5?('
-A5C' : 2 5F' 64T-A' ?*: A' F'?D 2C?' 46' E 2G&'6': 5&: 5(' : 4 * 1B
-5?C' 2&F' H&'GA- C' A4&4 * 1(' 2?' -A14@' ?41''5-A'&G' 'H5'
-A5' G12: 5' 46' : '$' 'L2-'4&' 4$51' -A5' 6514: '4 * ?' 652-*15?' 46'
-A5' 2G5

A' 5' -A5' D2&'21F?(' :44D5F' *D' @'-A'&' -A5' 4 F'
-4@&' 46' 21 5-2(' ?4 * GA-' -4' $21C' -A5' E 4&4-4&C' 46'
-A5'1' 5J'?-5&: 5' +C' -A5?5' : A'$2 14 * ?' 5J51: '?5?(' 41' 2&'
4: : 2?'4&2 ' 6412C' '&-4' -A5' &5'GA+4 * 1'&G' : 4 * &-1C(' -A5C'
?*66515F' G152- C' 614 E' -A5' @2&-' 46' E ' '-21C' ?-415?('
644F(' : 4-A'&G(' 2&F' -A5' E 4?-' : 4 E E 4&' &5: 5??21'5?' 46'
'65' -' ?55 E 5F' 2?' '6' -A5'1' E 2?-51' A2F' 2+2&F4&5F'
-A5 E' -4' -A5'1' 62-5' 4&' -A'?' 641 41&' 4 * -D4?-(' @'-A4 * -' 2'
?-1 * GG 5' '&' -A5'1' +5A2 6 6' 4@' F'66515&-' 614 E' -A5

1' $ B + 8 ' + '#' $# /' # ' ? "? ' *' +L
& ' ' ' 'A 'P 0$ D# "' ? ' G? ' *' ?# ' # '
/(' '##'&?'JJ'##ZZZ $ "$ # ' '0 $ /' ? '* ' $ /'
* '22'A' B + '/' $>$ /'&?' 0 / # "' ? '- $&' ' ? ' L
JJ##' $-' ' / ' + ' 'A' +>' U' $ '# & '*$+ '
P '##': # '-'F(E - , ' " # " $'# ' $# '
:#&# $'#- +' + #$' 8$ #' &L
*' && /# "' ' $ > ' ? ' & -$ ' ' ', #/#' + $='
0 # " /' ?$/' 0 ' ' ' >' "#'$&' +$"#'- + ' $' 0='
- /' 0>' *$+# '* ' + ' #+ ' # /#, ' / ' # , /$
0 * ' ?# ' ?$' 8 $ ' ' L #$+ $ $ -###' # # '& =

8 : 8 <

D215&-2 :215 @'-A @A':A ?2+5 2@2-:A5F 4$51 -A5 @5 6215 46 A51 ?4 F'51? '& -A5 4&G @21 46 12&2F2 A5 M*55& ?55E? -4 A2$5 -2H5& &4 D21- '& -A5 E2&B 2G5E5&- 46 -A5?5 @21?(@A':A(&4-@'-A?-2&F'&G -A5 &*E+51 46 A51 4@& 'E E5F'2-5 ?*+,5:-? 5E+21H5F '& -A5E(?A5 D14+2+ C 15G21F5F(614E -A5 6'1?-(2? 2DB D51-2'&'&G -4 12G4& 2? 5J: *?'$5 C 2? -A5 :4&M*5?-? '& -A5 5@ 41 F F'F -4 2?-' 5 &F55F(@A2-5$51 F5G155 46 '&-515?- ?A5 E2C A2$5 65 - '& -A5'1 ?*::5??(-A5 F5: '&'&G ?-2-5 46 A51 A52 -A 2- -A'? D51'4F @4* F A2$5 2 4@5F A51 -4 -2H5 &4 D21- '& -A5 :4&F*:- 46 -A5E

4&?2 $4 @2? &4- @2&-'&G -4 A'E?5 6 '& -A'? -1CB '&G 5E51G5&:C(2&F A'? &4+ 5 ?D'1'- ?55E5F -4 1'?5 2? 2 4*-@21F 2&F $'?'+ 5 15?4*1:5? 62' 5F 5 :A5515F A'? -144D? @'-A D14E'?5? 46 ?D55FC 15 '56(-2 H'&G :4&B 6'F5&- C 46 -A5 ?*DD '5? 46 G12'& A5 5JD5:-5F 614E 'B :'C(2&F -A5 E5& 2&F E4&5C A5 @2? -4 15:5'$5 614E D2'& 2&F 5&':5 5 :4&-1'$5F -44(9 ?2C? '4$'4(-A2- 2 15D41- ?A4* F G5- 2+142F(-A2- 2 D4&F514*? :46651 C'&G '& A'? 2D21-E5&- @2? 6' 5F @'-A G4 F(@A':A A5 :4* F F'02@ *D4& '& -A5 2?- 5J-15E'-C A5 4 F :2ED2'G&51?('&F55F(2::41F'&G -4 -A5 ?2E5 2*-A41'-C(?A44H -A5'1 A52F? 2- -A5?5 2&F 4-A51 2G155B 2+ 5 6':-'4&? 46 -A5'1 G5&512 (@'-A 2 $51C ?:5D-':2 2'1 A5C F51'$5F ?4E5 :4&6'1E2-'4&(A4@5$51(614E -A5 211'$2 ?44& 26-51 46 2 ':' '2& +21H 2F5& @'-A :41&(2&F 2&4-A51 614E 5&':5 @'-A $21'4*? ?51$':52+ 5

+$ "$/ ? = -&$/# / #0 $# +V #0 *$+ - , - $ -&&J #J

?-415?' 2&F' @521'&G' 2DD215 (' @A':A' 4&?2 $4' +4*GA-' 4&' A'?' 4@&' :15F'-' 2&F' -A2-' 46' A'?' D1'&:'D2 ' 466':51?(' 2&F' F'?-1'+*-5F' G12-*'-4*? C' 2E4&G' A'?' F5?-'-*-5' ?4 B F'51? 9

-' -A'?' -'E5' A5' 15:5'$5F' -A5' *&@5 :4E5' -'F'&G?' -A2-' 2' ?E2 ' 641:5' @A':A' A2F' +55&' ?5&-' 614E' D2'&' -4' A'?' 2??'?-2&:5' *&F51' 4&' 2&*5 ' F5' 5&2$'F5?(' 2&F' @A':A' A2F' 5665:-5F' 2' ,*&:-'4&' @'-A' 4&5' E*:A' 21G51' 614E' ':' C' *&F51' *G4' F5' 21F4&2(' @2?' ?*1B D1'?5F' +C' 04 *+'G&C' &521' 5112&4$2(' 5:5E+51' ; (' < ;(' 2&F' -4-2 C' F5652-5F ' A'?' F'?2?-51' @2?' 64 B 4@5F' +C' -A5' 15F*:-'4&' 46' 2 ' 2 2+1'2(' @A':A' -A5' 2--51' G5&512 (' 2-' -A5' A52F' 46' A'?' 15&:A' 2&F' :4--'?A' G5&F21E51'5(' 14F5' 4$51' 614E' 4&5' 5J-15E'-C' -4' -A5' 4-A51' @'-A4*-' 4DD4?'-'4& 6

A5' D14?D5:-' &4@' G15@' F21H51' 2&F' F21H51' 214*&F' -A5' '-- 5' G211'?4&' 46' 21 5-2 ' A5' F'?:4E6'-*15' 46' 5&2$'F5?' 5J: *F5F' A4D5?' 46'15 '56''&' -A2-' F'15:-'4& ' A5' G12F*2 ' 4::*D2-'4&' 46' E4?-' 46' -A5' ?-14&G' D 2:5?' '&' D* '2' +C' -A5' *H5' 46' 5E4*1?' :*-' 466' 2 ' :4EB E*&':2-'4&' @'-A' -A5' &5'GA+4*1'&G' :4*&-1C0' 2&F' 2' 15&:A' 6 55-' &4@' :1*'?'&G' '&' -A5' F1'2-':' 15&F515F' -A5' 211'$2 ' 46' 6*1-A51' ?-415?' 2&F' 15'&641:5E5&-?' 5JB -15E5 C' D15:21'4*?' 4&?2 $4(' A4@5$51(' E2'&-2'&5F' -A5' ?2E5' *&1*66 5F' :A5516* &5??' 2?' +56415(' 2&F' 5&B F52$4*15F' -4' '&6*?5' '-' '&-4' -A5' A521-?' 46'4-A51?' 5' D5165:- C' *&F51?-44F' -A5':A212:-51' 46' A'?' :4*&-1CE5&(

I' ' P '## :#**#' -' F(F A' ' 0#/' #0' '' -' F5(A =' 9 # $' +' #' #0' '' &$-' #' A' ' '##'&?'JJ## A ? #&$/ ' +$/ K' ' &$-' &J'##' A' 8 ' $-' &$-' J### 8 #&&#$ /# #' -' F34

H&5@' 2 ' -A5'1' 15?4*1:5?(2&F' -1'5F' -4' 14*?5' 5$51C' 2B -5&-' D1'&:'D 5' 46'A4&4*1(4C2 -C(D1'F5(2&F' &2-'4&2 ' 655 '&G 2&F'?*:A'@2?' -A5' 2*-A41'-C'@A':A' A5' 2:M*'15F' 4$51' -A5'1' E'&F?(2&F' ?4' F55D' -A5' 2665:-'4&' @A':A' A5' '&?D'15F(+C' -A5' 2E5&'-C' 46' A'?' E2&&51?' 2&F' -A5' G5&514?'-C' 46' A'?' F'?D4?'-'4&(-A2-' &4-' 2' E*1E*1' 41' ?CED-4E' 46''&?*+41F'&2-'4&' 5?:2D5F' -A5E' F*1'&G' -A5' @A4 5' 46'-A'?' 4&G' 2&F' D2'&6*' ?'5G5' *-' &5'-A51' -A5' 5J:5 5&:5' 46'A'?' -144D?(&41' -A5' 15?4*1:5?' 46'A'?' 4@&' G5&'*?(@4* F' A2$5' +55&' ?*6 :'5&-' -4' 5J-1':2-5' 4&?2 $4'614E'-A5'F'66':*-'5?' 46'A'?' ?'-*2-'4&(@'-A4*-' -A5' E4?-' 6 2G12&-' 51141?' 4&' -A5' D21-' 46'A'?' 4DD4&5&-' A5' D2&'?A' G5&512 (@A4' *&F51?-44F' -A5' :A212:-51' 46'-A5' 15&:A' :4EE2&F51' D5165:-C'@5 (2C' D2-'5&-B C' 2@2'-'&G' A'?' 4DD41-*&'-C('H5' 2' ?H' 6*' 65&:51(152FC' -4' E2H5' 2' F5:'?'$5' -A1*?-' 2-' -A5' 6'1?-' $* &51B 2+ 5' D4'&-' -A2-' ?A4* F' +5' D15?5&-5F' *:A' 2&' 4::2B ?'4&' 2-' 5&G-A' 466515F' '-?5 6' 521 C' '&' -A5' 64 4@'&G' C521 9

A5' 15&:A(&4' 5??' @521C' -A2&' -A5'1' 2F$51?2B 1'5?' 46' -A5'1' 4&G' '&2:-'4&(?2 '5F' 4*-' 614E' 2&4?2(@A515' -A5' $':514C' A2F' 5?-2+ '?A5F' A'?' A52F.M*21-51?( )2&*21C' < (' 2&F(:14??'&G' -A5' 62&-4(E21:A5F' *D' F'15:-C' *&F51' -A5' @2 ?' 46' 21 5-2(@'-A' -A5' '&-5&B -'4&' 46'F12@'&G' 4*-' -A5' G211'?4&' 614E' -A5' 4 F' F5&(K' 2?' -A5C' :2 5F''-(2&F' F5:'F'&G' -A5' M*2115' '&' 2' D'-:A5F' +2-- 5' A5' *H5' 46' 5E4*1?(2::41F'&G C(A2$'&G' -2H5&' *D' A'?' D4?'-'4&(?5&-' 2' -1*ED5-' '&-4' -A5' D 2:5

1' $' * ' 22' A' = P '## :# ' + ' # ' -' F() ' A ' 9 # $' 6# ' + (# ' #0' ' ' &$-' #J

-4' F56C' -A5' 152-' 2D-2'&' -4' -A5' 5&:4*&-51M +*-' -A5' 2--51' 15-*125F' 641' 2&?@51(' -A2-' R'A5'@2?'2::*?B -4E5F'-4' :A44?5'A'?' 4@&' D 2:5'2&F'-'E5'641'6'GA-'&G(' 2&F'@4* F'-A2&H'-A5' 15&:A'G5&512 ' -4'@2'-'-' ' A'?' E5&' 64*&F'-'E5'-4' ?A45'-A5'1' A41?5?((2&F'+*1&'?A' *D'-A5'1'21E?K' -' 5&G-A(' 5E4*1?(' 26-51' 15E2'&B '&G' ?4E5' F2C?(' 2&F' 6'&F'&G' -A515'@2?'&4' :A2&:5' 46' F5:4C'&G' A'?' @' C' 645' 614E' A'?' F565&:5?(' +14H5' *D' A'?' :2ED' 2&F' 15-'15F(' ?2-'?6'5F'@'-A' -A5' 5ED-C' A4B &4*1?' 46' A'?' G2?:4&2F5

4' ?44&51' A2F' A5' 62'1 C' -*1&5F' A'?' +2:H(' -A2&' 4&?2 $4(' @A4?5' ?4 F'51?' A2F' +55&' :A5:H5F' @'-A' F'6 :*-C' 614E' ?2 C'&G' 4*-' 4&' -A5'1' '&?4 5&-' 645(' 41F515F' -A5' @A4 5' ?-15&G-A' 46' A'?' :2$2 1C' *&F51' -A5' :4EE2&F' 46' '5G4' F5' 5&F4L2(' 6 2&H5F' +C' -@4' :41D?' 46' '&62&-1C(' -4' '??*5' 641-A' 2&F' D*1?*5' -A5' 15&:A' 5&F4L2' 5J5:*-5F' -A5?5' 41F51?' ?4' D14ED-B C(' -A2-' A5' +14*GA-' *D' A'?' A41?5(' @A':A' @515' ?4E5B @A2-' '&' 2F$2&:5' 46' -A5' 644-(' 4&' -A5' 1521.G*21F' 46' -A5' 15&:A(' +56415' '-' A2F' G4-' E2&C' E' 5?' 614E' 21 5-2' A5' 2--51' '&?-2&-C' A2 -5F' -4' 15:5'$5' -A5' :A21G5' 46' -A5' D2&'21F?(' 2&F(' 26-51' 2' '$5 C' ?H'1E'?A' 46' &4' G152-' F*12-'4&(5&F4L2' 15-152-5F(' 64 4@5F' +C' -A5' '&:2*B -'4*?' 5&5EC(' @A4(' '&' :4&?5M*5&:5' 46' -A5'1' '115G* 21' '2&F' ?-12GG '&G' E21:A(' @515' F5-2:A5F' 614E' -A5' E2'&' +4FC' 46' -A5'1' 21EC' &' -A5' E52&' -'E5(' -A5' 2F$2&B :'&G':4 *E&?' 46' -A5' D2&'?A' '&62&-1C(' @A':A' A2F' &4@' :4E5' *D' @'-A' -A5' 15-152-'&G' A41?5(' *&5JD5:-5F C' :4?'&G' 4&' -A5' 5&5EC0?' 6 2&H?(' -A15@' -A5E' '&-4' ?4E5' F'?41F51(' @A':A' +5:2E5' :4ED 5-5' @A5&' -A5' 6 C'&G' :2.

$2 1C 46 -A5 D2&'21F? ?*FF5& C @A55 '&G 14*&F('& -A5 12D'F ?-C 5 46 -A5 441'?A -2:-':?(:A21G5F -A5E +4 F C '& 614&- @2? &4@ :4&6*?'4& 4E5 E2F5 15?'?-2&:5(+*- E4?- ?4*GA- 4& C -4 5?:2D5 2 65@ 56B 65:-5F '-(+*- -A5 G152-51 D21- 46 -A4?5 @A4 F'F &4- 62 4& -A5 6'5 F @515 :211'5F D1'?4&51? -4 21 5-2(@A515 5&F4L2 64*&F -A5 152- 2D-2'& @'-A 0A'? @A4 5 21E C F12@& *D *&F51 -A5 @2 ? '& 41F51 46 +2-- 5(152FC -4 ?*DD41- A'E '& D51?4&('6 &5:5??21C A5 @A4 5 2662'1 D2??5F ?4 5JD5F'-'4*? C(-A2- -A5 $':514C(@A4(2? A2? +55& ?2'F(:4&F*:-5F A'? 15-152- '& 2 E4?- F'?41F51 C E2&&51(2&F('& 62:-(A2F 2 152FC F'?D51?5F ?5$512 +2--2 '4&? 46 A'? '&62&-1C -4 -A5 F'6B 6515&- -4@&? 614E @A':A A5 A2F F12@& -A5E (H&5@ &4-A'&G 46 -A5 15&:4&-15 -' A'? E5& @515 ?5:*15 C 4FG5F @'-A'& -A5 @2 ? 46 21 5-2 9

A5 211'$2 46 2 " 5&5-'2& -12F51 2- -A'? -'E5(@'-A 2 :21G4 46 G12'&(+14*GA- 2 -5ED4121C(15 '56 -4 -A5 D15??'&G &5:5??'-'5? 46 -A5 G211'?4& 6 A'? @2? 64 .

I P '## R:# -- / & // A $ * BB&B /# - $ $ $* ?# $**$# 0 L G $ &? **#& $ / + $ #$ " + $ 8 $ ' 0 $0 # & #M & *& $# # ! # * & # +$/ '0> ? * + ? '0 $' > *' ? $L #$ $ # ? , $ G$ /' 0>'$& +0$ '5( ) 0 G ?# D #"? / ? - & # #/ '* "?' / ? - & # 8 $ $- $# G? D $ #' > # # ? & *' ?# $ # +# $ /' # ? /# & +*# $ /' &$- * $? & ? + -$" # ? $ #$ & ' + -$" # ? $ #$?# #$?$? " 0$ L $ /' # /'G# ?'$ - #/ $ /'$ G *' J $ # G?#&?' ? G ?$?# # *' ? &?' & + / - > ?$ $? # ! L # # * #& /' 0> ? + P '## :# --' F((A F( ) A 8 #&&#L $ /# #' -- ' F5B A F53 A 8#$ #0 JJ#J &$-'#' A + + + ### - - @(F A @@F A $ X ?# -- > G$ G# "' ? $'$ #& *' ? &?" L $ " 'G? ?$'# "' " - =

4@5F +C -A5 @5 :4E5 '&-5 'G5&:5 46 -A5 -4-2 F'?B :4E6'-*15 46 -A5 15&:A 6 55- *&F51 4&? F5 15,2& +C -A5 D2&'?A 2FE'12 5L:2&4('& 2& 2:-'4& 466 -12&-4(@A':A :4&?5M*5&- C 56- -A5 ?52? 4D5& -4 -A5 ?*DD '5? F2' C 5JD5:-5F 614E ':' C 41-*&5 ?55E5F &4@ '& -A5 G'$'&G $5'&(641 '& 2 65@ F2C? 2 :4&$4C 46 ?5$5& -12&?D41-? 614E -A2- '? 2&F(2F5& @'-A G12'&(E52-(2&F 4-A51 ?-415?(:2E5 ?265 '&-4 21 5-2(2&F ?*DD '5F 2+*&F2&- E52&? 641 15:1*" NG -A5 A52 -+U(2&F ?D'1'-? 46 '-? 62E'?A5F '&E2-5?I9

A*? 15?-415F(-A5 D2&'21F? +5G2& -4 44H 641B @21F @'-A 52G51 :4&6'F5&:5 -4 -A5 2:A'5$5E5&- 46 ?4E5 &5@ 5&-51D1'?5 A5 -5E51'-C 46 -A5 $':514C ?44& 26641F5F 2& 4DD41-*&'-C A5 D54D 5 46 2?. -5 2&5-2(2 -4@& &521 215&-4(@515 F1'$5& +C -A5 '&?4 5&- 2&F ':5&-'4*? +5A2$'4*1 46 -A5 15&:A G21B 1'?4& -4 +5-12C -A5 D 2:5 '&-4 -A5 A2&F? 46 -A5 D2B &'21F? A5 *H5 46 5E4*1?(5&12G5F 2- -A'? F5B 65:-'4&(D15D215F -4 E21:A 2- 4&:5 @'-A A'? @A4 5 641:5 2&F -2H5 ?'G&2 $5&G52&:5 4& -A5 F5$4-5F '-- 5 -4@&N 2&F -A'?(&4-@'-A?-2&F'&G -A5 15E4&?-12&:5? 46 A'? 466':51? 2G2'&?- 2 ?-5D @A':A E*?- '&5$'-2+ C '5JD4?5 -A5 *&D14-5:-5F G211'?4&? '& -A5 &5'GA+4*1B A44F -4 -A5 2???* - 46 -A5 1 $'G' 2&- 5&5E C '& 21 5-2 A5 5$5&- ,*?-'6'5F -A5?5 2DD15A5&?'4&? 6

4 ?44&51 A2F 4&?2 $4 521&5F -A5 F5D21-*15 46

*$ +$"$K# *& + # I # &? JJ## A "'"#$ /# # ? : #$ 'UC $ > - && # A P '## + &?$ # $/ *' '# '" :# $ - IF(F # G? # G$ + / / 8 #&&#$ /# # #0 : - F5B * ?# G $ +> A '## &? JJJ#

5E4*1?4&2F'?-2&-5JD5F'-'4&(-A2&A515?4$5F2-4&:5-4E2H52&2--2:H4&-A5-4@&46*$4(2+4*--@5$5E'5?F'?-2&-(2&F5655&F5F+C-A5+12$52'5(@'-A2:41D?46 15&:A2&:5?2&F2?E2&C644-5+1*21C;;&F(<'-A A'?*?*2D14ED-&5??(-A5D2&'?AG5&512M*'--5F-A5@2?46 21 5-2-A5?2E5&'GA-4&@A':AA515:5'$5F-A5&5@?(-2H'&G@'-AA'E A'?@A4 5 5665:-'$5641:5(94*&-'&G-4 2+4*-'&62&-1C2&F<('GA-2&FA52$C21E5FA41?5 4 65@('&F55F(15E2'&5F-4G*21F-A5:'-C(-A2-A5-A4*GA-''-D1*F5&--4-2H5?4E5 46-A5D1'&:'D2''&A2+'-2&-?2?U4?-2G5?-4'&B'-?6'F5'-C'&A'?2+?5&:5

-+152H46F2C(-A5'--5 21EC 211'$5F+56415*$4 4&?2$4'EE5F'2-5C4D5&5F2'$5C:2&B&4&2F54&-A5 4F12ED21-?(@A':A'&5??-A2&64*1A4*1?5665:-5F2':4&?'F512+5+152:A 5-A5&5FA'?E5&-4-A5 2??2*-(-2H'&G:A21G5A'E?5 6 46-A4?5@A4@515-4?-41E-A5+152:A M @A'52&4-A51F'$'?'4&(21E5F@'-A 2FF51?641?:2'&G-A5@2?(@2?'&-1*?-5F-4-A5 2F$5&-*14*?:2$2'51 '5G4F5215F5?

A5 2??2'2&-?5JD51'5&:5F E415 15?4*-5 15?'?-B2&:5-A2&-A5C A2F2&-':'D2-5F614E-A5'&:4&?'F51B2+5&*E+51 46-A5G211'?4& 2 2':5(-A14@'&GA'E?5 6'&-4-A5+152:A @'-A A'?'14&+2&F46F'?BE4*&-5F G5&F21E5?(F14$5+2:H-+5 D2&'21F?2?46-5& 2?-A5C 2--5ED-5F-4?5-644-4&-A5+14H5&12ED21-?M @A'52?:4&21:A51C?A4@515F F4@&$4 5C?46 2114@?-A':H2?A2'614E-A5+2--5E5&-?

4&' -A5' 5JD4?5F' D51?4&?' 46' -A5' 2??2' 2&-?' A5' 2--51(' A4@5$51(' ?44&' 12 '5F' *&F51' -A5' 5C5' 46' -A5'1' G5&512 (' 2&F' 15-*1&5F' @'-A' 615?A' 6*1C' -4' -A5' :A21G5(' *&-'' -A5' 4$51@A5 E'&G' -'F5' 46' &* E+51?' +415' F4@&' 2 ' 4DD4?'B -'4&(' 2&F' -A5C' D4*15F' '&' -A14*GA' -A5' +152:A' 2&F' 4$51' -A5' @2 ?' @'-A' '115?'?-'+ 5' 6*1C' A5' +12$5' '-- 5' G21B 1'?4&' @2?' F1'$5&' +56415' -A5E'N ?-' (' A4@5$51(' 4::2B ?'4&2 C' E2H'&G' 6'GA-' '&' -A5' ?-155-?' 2&F' A4*?5?' A5'1' '&-15D'F' C4*&G' :4E E2&F51' 2' 2 ':5(' 15B -152-5F' 62:'&G' -A5' 5&5EC(' @A4' D15??5F' -A':H' 2&F' :4?5' *D4&' A'E(' -' (' A'?' 6*1-A51' D14G15??' +5'&G' 21B 15?-5F' +C' 2'@2 (' A5' D2:5F' A'?' +2:H' 2G2'&?-'' '-(' 2&F' H5D-' -A5E' 2-' +2C(' E2H'&G' 2' @'F5' :'1: 5' 214*&F' A'E' @'-A' -A5' F52FC' ?@55D' 46' A'?' +2-- 52J5' *-' -A5' 4FF?' @515' -44' E*:A' 641' A'EN 2&F' 2-' 5&G-A(' 26-51' 15D52-5F' @4*&F?(' A2$'&G' +55&' +14*GA-' -4' -A5' G14*&F' +C' 2' F55D' :*-' '&' -A5' A52F(' A5' @2?' E2F5' D1'?4&51N &4-(' A4@5$51(' +56415' A5' A2F' 6*&G' A'?' ?@41F' 621 4$51' -A5' A52F?' 46' -A5' 2??2' 2&-?(' F'?F2'&'&G(' '&' -A5' -1*5' ?D'1'-' 46' 2' H&'GA-.5112&-(' -4' C'5 F' '-' -4' -A5' 12++ 5' 214*&F' A'E 9

' 15?'?-2&:5' @2?' &4@' 2-' 2&' 5&F' A5' 65E2 5?

I' P '## :# ' --' F(3' F(5' A'8 #&&#$ /# #' -' F5B' A' =' $ / K' '&?'& JJ' A ' '##' &?' JJJ#0A ? ' / ' 8 ' $-# $ '&$-' JJ##

? '"$ $ '0 ?$'# ' *' $L #& ' $ /'# / /' ?'G? ' # "' *' ' '#' /'0>'P $ '/0 L '#'$' >'? $ = # # "' ' , # ' G ?>' *' ?'&?#'$ ' - ' *' /' # $ ' ? '#

$ '# J- #0 '&?$ +' #+-$ L /' ' ?' &?' + + # '$ /' &? #& ' *' ?#' $ &# '/$ ' ' >' * +' ?' -#& , ' &?$ $& ' *' ?'/ $# '0 '* +' $" ' # "' *' +$ &' ? /' ' ' ? +'G?#&?' &$ ' ' +# /' ?'/ "? >' * $ ' *

- G 'D #"?

T' ?' $ +#+'$ /' ?'- ' *' ?$ +$" V

46' -A5' D 2:5' A2F' 6 5F' 'H5' ?4' E 2&C' 61'GA-5F' F551' -4' 4&5' 46' -A5' D1'&:'D2 ' :A*1:A5?N' 2&F' 4&?2 $4(' @'-A' E 415' A* E 2&'-C' -A2&' *?*2 ' '&0 -A5?5' +21+214*?' @21?(' D 2:5F' 2' G*21F' 4$51' -A5'1U D51?4&?' @A':A' 5665:-*2 C' ?5:*15F' -A5 E' 614 E' -A5' '&?* -?' 46'-A5' ?4 F'51C ' 6-51' 2' ?A41-' -'E 5' ?D5&-' '&' G2-A51'&G' *D' -A5' +44-C(' 2&F' ?5:*1'&G' A'?' D1'?4&51?(' -A5' D2&'?A' G5&512 (' A2$'&G' 2:A'5$5F' -A5' 4+,5:-' 46' A'?' 5JD5F'-'4&(' ?5-' 4*-' 4&' A'?' A4E5@21F' E21:A(' 2&F' 211'$5F' @'-A4*-' '&-51B 1*D-'4&' 2-' 21 5-2

A5' *H5' 46' 5E4*1?' A2F' ?:21:5 C' 2DD5215F' +5B 6415' 2?-5 2&5-2(' +56415' A5' 15:5'$5F' -'F'&G?' 46' -A5' 2--2:H' 4&' *$4 ' 5' D*-' A'E?5 6(' @'-A4*-' 4?'&G' 2' E 4E5&-(' 2-' -A5' A52F' 46' A'?' G5&F21E5?(' ?*DD41-5F' +C' -A5' @'??' D'H5E5&(' A4D'&G' -4' 152:A' -A5' +5 52G*515F' -4@&' '&' -'E 5' -4' 12'?5' -A5' ?'5G5 ' 152-' @2?' A'?' 2?-4B &'?AE5&-(' -A5156415(' 4&' 211'$'&G' +56415' '-(' -4' 6'&F' &4' -12:5' 46' 2&' 5&5EC(' 5J:5D-' -A5' 5&?'G&?' 46' D2'&' *&6*1 5F' 614E' -A5' F5?51-5F' +2-- 5E5&-?' 41-'6'5F(' 2&F' F5,5:-5F(' A5' E2F5' &4' 6*1-A51' 2--5ED-' -4' 15:4B $51' 2?-5 2&5-2(' +*-' ?' 5&- C' F15@' 466' -4' A'F5(' A'?' :A2G1'&' '&' -A5' @2 ?' 46' 2&4?2 9

E 4&G' -A5' D1'?4&51?' @515' ?5$512 ' D51?4&?' 46' F'?B -'&G*'?A5F' 12&H ' 4&?2 $4' -152-5F' -A5E' @'-A' A'?' *?*2 ' :4*1-5?C(' 2&F' 5?D5:'2 C' 2' 2 ':5(' @A4E' A5' D14$'F5F' @'-A' A'?' 4@&' ?*1G54&' 2&F' 2 ' -A5' 2DD 'B 2&:5?' 641' 15&F51'&G' A'?' ?'-*2-'4&' 2?' :4E641-2+ 5' 2?' D4??'+ 5 ' 41' -A5' :4E E4&' 6' 5(' A4@5$51(' A5' ?A4@5F

&4' ?*:A' ?CED2-AC' +*-':4&F5E&5F'-A5E' 2 '-4' ?51$5'
'&' -A5' D2&'?A' 2FE'12 0?' G2 '5?(' @A515' -A5C' :4&-'B
&*5F'-4'-A5' : 4?5'46'-A5':2ED2'G&' &' *&641-*&2-5'
E'?*&F51?-2&F'&G' A2F' 4&G' ?*+?'?-5F' +5-@55&' -A5'
15&:A' 2&F' D2&'?A' :4EE2&F51?' 15?D5:-'&G' -A5'
12&?4E' 2&F' 5J:A2&G5' 46' D1'?4&51?' 2&F' 4&?2 $4'
@2?' D14+2+ C' 5F' -4' -A'?' ?5$515' 1&52?*15(' ?4' F'6651B
5&-' 614E' A'?' *?*2' : 5E5&:C(' +C' 2&' *&@' '&G&5??'
-4' 5&:*E+51' A'E?5 6' @'-A' 2' ?*D516 *4*?' D4D* 2-'4&'
'&'-A5'+5?'5G5F':'-C 9' *-(' '&'-1*-A(' ?*:A' 2'D14:55FB
'&G(' A4@5$51' 4665&?'$5'-4' A*E2&'-C(' @2?' &4-' 2-' 2 '
15D*G&2&-' -4' -A5' A2*GA-C' ?D'1'-' 46' :A'$2 1C(' @A':A(
15?51$'&G' '-?':4*1-5?'5?' 5J: *?'$5 C'641'-A4?5' 46'G5&- 5'
+ 44F' 2&F' A'GA' F5G155(' :215F' '-- 5' 641'-A5' '&651'41'
41F51?(' @A5-A51' ?4 F'51' 41' D52?2&-(' @A4E' '-' 2+2&B
F4&5F' @'-A4*-' 15E41?5'-4' 2 '-A5':2D1':5?' 2&F':1*5 B
-'5?' 46' E' '-21C' ':5&?5

A5':2D-*15'46' *$4'@2?' 2--5&F5F'@'-A' 'ED41-2&-'
:4&?5M*5&:5?' -4' -A5' D2&'21F?' 5?'F5?' 2' $2 *2+ 5'
+44-C' 46':4-A5?(' ,5@5 ?(' 2&F' E4&5C(' -A5C' +14*GA-'
"+2:H' @'-A' -A5E' &521 C' 2' -A4*?2&F' A41?5?(' @A':A'
6*1&'?A5F' 4&?2 $4' @'-A' -A5' E52&?' 46' 2*GE5&-'&G'
A'?':2$2 1C(' @A4?5' ?E2 ' &*E+51' A2F' A'-A51-4' E2-5B
1'2 C':1'DD 5F' A'?' 4D512-'4&?' 5' 2::41F'&G C'?5 5:-B
5F' ' 46' A'?' +5?-' -144D?' 2&F' E4*&-5F' -A5E' 4&' -A5'
15&:A' A41?5?' -A*?' D14$'F'&G' A'E?5 6' @'-A' 2' :41D?(
+*1&'&G' @'-A' L52 '-4' 2DD14$5' '-?5 6' @41-AC' 46'-A5' F'?B
-'&G*'?A5F' A4&4*1':4&65115F' 4&' '-6

1' ' 0# -' A P '## ##' -'F)E A 9 #$'6# ' +'#'
:#$'-'F(5 A ; # $ $' +' #0'>'&$-'J#'
*' P '##:#$'-'F(5

8 : 8

65@ @55H? 26-51 -A'?(-A5 G5&512 15:5'$5F 2& 'ED41-2&- 2::5??'4& 46 ?-15&G-A 614E -A5 211'$2 46 ;(51E2& E51:5&21'5?(@A':A 4&)*2& 2&*5 (-A5 D2&'?A E'&'?-51 2- -A5 *?-1'2& :4*1-(A2F +55& D51E'--5F -4 12'?5 '& -A5 5ED5141?? F4E'&'4&?' A'? 5$5&- F5-51E'&5F -A5 152- 2D-2'& 4& 2 ?-5D @A':A A5 A2F +55& ?4E5 -'E5 E5F'-2-'&G A5 &5@ 5$'5? D 2:5F A'E '& 2 :4&F'-'4& 641 2??*E'&G -A5 4665&?'$5 '? ?-4:H 46 D14$'?'4&?(E4154$51(2 152FC E*:A 15B F*:5F(@4* F +5 4+$'4*? C '&?*66':'5&- 4&G -4 E2'&B -2'& A'? '&:152?5F &*E+51? 5 15?4 $5F(-A5156415(-4 ?2 C 4*- 46 -A5 4 F @2 ? 46 21 5-2(2&F(2$2' '&G A'E?5 6 46 -A5 A'GA ?D'1'-? '& @A':A -A5 2-5 ?*::5??5? A2F D*- A'? -144D?(-4 +1'&G -A5 5&5EC 2- 4&:5 -4 +2-- 5 9

8$ #0$> + ## #0 J#J &$- J' A 9 # $ + # #0 ' ' &$- J'# A $ * 2)

<<S

' Z

' 7 ==== 8 ' 7 6' ==== : L

' ' 8 ==== ' '

<

+ ' 2::4ED2&C'&G' -A5' 152-' 2D-2'&' 6*1-A51'
'&' A'?' @21 'H5' 4D512-'4&?(' '-' @' ' +5' &5:5??21C' -4' -2H5'
2' 12D'F'G 2&:5'2-' @A2-' @2?' D2??'&G' '&' -A5' 15&:A' 2&F'
D2&'?A' :4*1-?(' @A515' &5G4-'2-'4&?' @515' '&' -12'&' 641'
D*--'&G' 2' ?-4D' -4' -A5E' 2 -4G5-A51

A5' 152F51' A2?' +55&' E2F5' 2:M*2'&-5F' '&' 2' D15B
:5F'&G' :A2D-51' @'-A' -A5' E211'2G5' 46' -A5' &62&-2')4B
2&&2(' ?5:4&F' F2*GA-51' 46' -A5' 2-A4 ':' ?4$515'G&?('
@'-A' -A5' 1:AF*H5' A' 'D(' ?4&' 46' -A5' ED5141' 2J'B
E' '2&(' 2&F' ?4$515'G&(' '&' 1'GA-' 46' A'?' E4-A51(' 46' -A5'
4@' 4*&-1'5?' A5' 6'1?-' 61*'-' 46' -A'?' E211'2G5' @2?'
-A5' :5 5+12-5F' A21 5?' (' +41&' 2-' A5&-(' 5+1*21C'
;=-A(' < (' @A4?5' +'1-A' @2?' &4' ?44&51' 2&&4*&:5F' -4'
b*55&' ?2+5 2(' -A2&' ?A5' D15F':-5F' -A2-' -4' -A'?' '&62&-'
@4* F' 4&5' F2C' F5?:5&F' -A5' 1':A' '&A51'-2&:5' 46' -A5'
D2&'?A' E4&21:AC 9' A5' D15E2-*15' F52-A' 46' -A5

' 8$ # / K' / ' $ 0$!$ ' =' ? ' , ' J- /' ? *'
' '$ '2@EE $ / '$ ' # ' ? ' $ " $" ' *' & #- '
6# ' / ' $ ' : ' + '#'-' ' ! ' '& &#/# ' - ' $?#$+ R

A5'1 2DD215&-(''&:5 'G*5 (&4- 4&G 26-51(D15D21B 5F -A5 @2C 641 -A'? 5$5&- +C F5$4 $'&G -A5 ?*::5??'4& 4&)42&&2(A21 5?0? E4-A51 14E -A2- E4E5&- -A5 ?4$515'G&? @515 D15??'&G '& -A5'1 5&-152-'5? -A2- -A5 21:AF*H5 2&F A'? @'65 @4* F $'?'- D2'&(-A2- -A5C E'GA- 15:5'$5 -A5 :*?-4E21C 42-A? 46 2 5G'2&:5(2&F -A2- -A5 641E51 E'GA- +5:4E5 2:M*2'&-5F @'-A -A5 :A212:-51 2&F '&?-'-*-'4&? 46 A'? 6*-*15 ?*+,5:-? A5 G'FFC C4*&G D1'&:5(A4@5$51(-A4*GA- -44 E*:A 46 D15?5&- D 52?*15 -4 A55F -A5 :2 46 2E+'-'4& 41 F*-C(2&F ?*6515F E415 -A2& 2 C521 -4 G 'F5 2@2C +56415 A5 :4ED '5F @'-A -A5 ?*E E4&? 46 A'? 14C2 D215&-?

& -A5 2--51 D21- 46 < <(A' 'D 2&F)42&&2(2-B -5&F5F +C 2 &*E514*? ?*'-5 46 5E'?A :4*1-'51?(?5- 4*- 4& -A5'1 ,4*1&5C(D14D4?'&G -4 -2H5 -A5&9 @2C -A14*GA 12&:5 A5C @515 5&-51-2'&5F @'-A D146*?5 E2G&'6':5&:5 2&F A4?D'-2 '-C 2- -A5 15&:A :4*1-(@A515 -A5 D4 '-': 2--5&-'4&? 46 4*'?Z &4- 4& C 5662:5F -A5 15:4 5:-'4& 46 2&:'5&- '&,*B 1'5? -4 -A5 A4*?5 46 *1G*&FC(9 +*- 56- 'ED15?B ?'4&? 46 -A5 E4?- 2G1552+ 5 :A212:-51 4& -A5 E'&F

$ # ? &# & + $ & *? $ 0 # " 0 +' ?$ $# (/$>. $ /$>G?#&?*#*G $ 0 # ' 8$ #0$>G$ *L $ '?#+? "? ? G? & *? #* +- /' 6# / -$ $ +' ## #0 J#J &$-#J

1 ?$: # (- L / & ?$/& #' / & ? ?$ /' * $"

G# ? $ /# " ? G$ $ $/> +$ # /0>- J> ?# #-(*$L ? ? + - $J#+# #$ ($ /' ?# ' # & + - ' *?# G " $" + " $ " $? + - (/$ "? ' G? + ? ?$/0 $**#$ & /' * +' ? # *$ &>' ?# G * /' # G?#&?' D / -'# ? '? $ * $J#+# #$ + ' ?$' +$/ ' #+- # ' ? ' $ # -# # *?#

46 -A5 C4*&G D1'&:59 6-51 ?4E5 @55H? D2??5F '& 2 ?*::5??'4& 46 ?D 5&F'F 65-5? 2&F 2E*?5E5&-? 2- 4'?(@A515 -A5 21:AF*H5 :4&61E5F -A5 -152-C 46 15&- 15:65&- C E2F5 +5-@55& A'? 62-A51 -A5 5ED5141 2&F -A5 15&:A H'&G(?-'D* 2-'&G -A5 E211'2G5 46 4*'?0? 5 F5?- F2*GA-51(-A5 1'&:5?? 2*F5(@'-A A' 'D0? ?4& A21 5?(-A5 14C2 D2'1 15?*E5F -A5'1 ,4*1&5C -4@21F? D2'&(@A':A -A5C 5&-515F +C -A5 @2C 46 4&-212+'2( )2&*21C ; -A(< ; 6

2G&'6':5&- D15D212-'4&? A2F 0+55& E2F5 641 -A5'1 15:5D-'4& A5 12&F 4&?-2+ 5 46 2?-' 5(-A5 *H5 46 2J212(2&F E2&C 4-A51 46 -A5 D1'&:'D2 G12&F55?(@2'-5F 4& -A5 +41F51? -4 15:5'$5 -A5E 1' '2&- 6]-5? 2&F ' *E'&2-'4&?(2&F 2 -A5 *?*2 E21H? 46 D*+ ':15,4':'&G(G155-5F -A5'1 D14G15?? -A14*GA -A5 D1'&:'D2 :'-'5? 46 -A5 41-A 2&F 2' ; 15B 2J'&G -A5?'ED ':'-C(41 12-A51 ?5$51'-C(46 -A5 ?*ED.

I $#$ $ #0 JJ'## &$- J# A 8 $# / &#0 ? & L /#$ & - # *? ?##-$ /'P $ L $0> ? & $ # G? ? G$ - 0$0 > - ?#+ *' ? ?# #$? G ?# ' $ -# # *? ?** &- / & / ? #> '"+# /0> ? *$L # '"$ # 0> +$D#"' !' > + $ # "$ /' +0$ /0$+ , -$ 0 ? M / && ' (; + ( );') ( )+)) + &< 6# / # H --' 2B(2B@'

-$ # '"? "?? $# ?#L #- D ?# $ # ? -$ #$L + $ - * $ & $ / 0L

, > /#/ ? +$" I # H $ # ?# K $# * /## L $ # # $ / < $ $&D GL /"+ *# * # # > $ $ -$$ $0 ? -$ # ?? ?# L #$ G? # # G# ?+ &?? $ # *$& # ? ?$ "? > L * $ *?# G#* ? $ &?/ &? $D -$ # ? & + > 9 # $ $ + ' #0 #' &' ' A $ 0$!$ $ $ $ 2@EF A 0$ &$ > / $" + ## > JJJ &$- J### &' # A + - #' $ #- +$ #, + # -) != 8$ # / K / $ 0$!$ L $ $ 2@EF A $ / $ 6# / $: + # - @

-*21C 2@? 46 -A5 D51'4F(?4 621 2? -4 2 4@ -A5 *?5 46 ?' H? 2&F $21'4*? :4 4*15F 2DD215 (?A4@? -A5 2--5&-'4& 46 -A5 ?4$515'G&? -4 5$51C :'1:*E?-2&:5(A4@5$51 -1'6 '&G(@A':A :4* F 2665:- -A5 E '&F? 46 -A5 C4*&G D1'&:5? 2G1552+ C(2&F F'66*?5 2& 2'1 46 :A551B 6* &5?? 4$51 -A5 ?:5&5 9

51F'&2&F 2&F ?2+5 2(@A4 @515 4::*D'5F @'-A -A5 2662'1? 46 &F2 *?'2 2- -A'? D51'4F(&4 ?44&51. A521F 46 -A5 211'$2 ' 46 A' 'D 2&F)42&&2 -A2& -A5C A2?-5&5F -4@21F? -A5 41-A A5C 152:A5F 4 5F4 -4@21F? -A5 5&F 46 D1' (2&F('& 2 65@ F2C?(-A5 M*55&(@A4 D2'F -A5 *?*2 D5&2 -'5? 46 14C2 -C '& ?55'&G A51 :A' F15& 4&5 26-51 2&4-A51 15E4$5F 621 614E A51 '&-4 F'?-2&- 2&F?(A2F -A5 ?2-'?62:-'4& 46 2G2'& 64 F'&G A51 +5 4$5F F2*GA-51 '& A51 21E?

& -A5 ;;&F 46 -A5 5&?*'&G E4&-A(-A5 21:AB F*H5 2&F A'? @'65 15:5'$5F -A5 *?*2 42-A? 46 652 -C 614E -A5 :41-5? F* C :4&$4H5F 641 -A5 D*1B D4?5 2- 4 5F4 6 T'&G 51F'&2&F(&4- 4&G 26-51(E2F5 2 ,4*1&5C '&-4 12G4&('& @A':A -A5 M*55&0? 655+ 5 A52 -A @4* F &4- D51E'- A51 -4 2::4ED2&C A'E('& 41F51 -4 "D15D215 -A5 @2C 641 2 ?'E' 21 15B :4G&'-'4& +C -A5 5?-2-5? 46 -A2- 152 E 5 215

V*1'-2(&2 5?(-4E($ '+ :2D $ > 5115127?('?-F) ?D2G&5(-4E $'''D ; ;

A'? 5J-15E5?'ED':'-C 462-B -'15('& @A':A V*1'-2 F'?:51&? -A5 E4F5?-C 46 -A5 -'E5?(K @2? 5&641:5F +C 2@?(-A5D4':C 46 @A':A(@A2-5$51 +5 -A4*GA- 46 -A5'1 E412''ED41-(E2C @5 +5 F4*+-5F '& 2& 5:4&4E':2 $'5@ ?A2 A2$5 4::2?'4& -4 F12@ -A5 152F51)? 2--5&-'4& -4 -A5 E A51526-51

c A5 @1'- '? F2-5F 2- 515. &2(21:A S -'? 5J-12:-5F +C 21'&2 614E -A5 21:A'$5? 46 4B 5F4 541'2 F5 2? 41-5?(-4E ''D <S

&4-' '&641E5F' @A2-' 21G*E5&-?' -A5' ?2G2:'4*?' E4&B
21:A' E2F5' *?5' 46' -4' F'?D5' -A5' ?:1*D5?' 641E51C'
5&-51-2'&5F' +C' -A2-' '&F5D5&F5&-' +4FC'4&' 2' ?'E' 21'
(2DD ':2-'4&' '&' +5A2 6'46'A'?' F2*GA-51(' -A5' 2-5' b*55&'
46' 41-*G2 '9' A5C' @515' :4ED5-5C' ?*::5??6*('
A4@5$51N' 2&F' A' 'D' 2&F')42&&2(' A2$'&G' 2?:51B
-2'&5F' -A5' 62$4*12+5' F'?D4?'-'4&' 46' :41-5?(' E2F5'
-A5'1' 5&-12&:5' '&' G152-' ?-2-5' '&-4' -A5' 2&:'5&-' :'-C'
46' 212G4???2(' '&' -A5' E4&-A' 46' :-4+51' &' -A5'
; -A(' A2$'&G' 6'1?-' E2F5' 42-A' +56415' -A5' ,*?-':5' -4'
4+?51$5' -A5' 2@?' 2&F' '+51-'5?' 46' -A5' 152 E(')42&&2'
2?' 6*-*15' M*55&' D14D1'5-41(' 2&F' A' 'D' 2?' A51' A*?B
+2&F(' @515' ?4 5E& C' 15:4G&'?5F' +C' -A5' 64*1' 21E?'
46' 12G4&' 2?' ?*::5??41?' -4' -A5' :14@&(' '&' F562*-'
46' E2 5' '??*5' 46' T'&G' 51F'&2&F' A5' :'1:*E.

1' '#' +$ D$0' ?$' ?'
$" 'G# '" $>' '
#, ###' ' '$'-# ' &?L
#"' ?'& # # $'?# >' *'
?#'& >' ? /'?$' '+#L
/' ' #&' ?' " /' '
G?#&?' ?'& ' ? "?'- - '
' '#'* + '/&## '#'
?'$ $ " '&$' *'?' *$ $'
$0 $' ? ' + ' '?$' '
0 ' ' ' $ '*'/ -$ L
#"* +'$ &# ' $"'#' ?'
- '# $ & ' # &' P $ $'
?$/'$' ' G? +'& '+#"?'
$G* >'?$' ' / /'# ' $?'
' & " ## <' '$'* +$ '$L
? "?' J& / /'* +'?' ? '
#'? ' G'- 'G$' "$ / /'
$' & +- ' ' $ +#'?'
' #+-$# /' ' ? ' +$ '
? ' $ &$' "" ' ' JL
-$ $# ' *' ?' $**$# ' =N

&2:'4&5? F5 12G4&(' '+'''' :'
HH' 2&F' 4EE5&-21''(DD' ; ='
<<(7' 2&F' V*1'-2' M*'5-C' F'?B
E'??5?' '-' @'-A' -A5' 15E21H -A2-'
R' -A515' @2?' ?4E5' 4DD4?'-'4&
12''?5F(' +*-' ' ' '
' ' ' ' '-A2-'
-A515' @2?' &4-' -A5' ?2E5' F'66':*B
-C' 2?641&U51 O(K' / '?-(' F5' 51B
&2&F4(' -4E' '' '+' : ' :2D' $7'
-' '?' :*1'4*?' -4' ?55' @'-A' @A2-'
5661 4&-51C' -A5' D14-A4&4-21C' 46'
-A5' :41-5?(' '&' -A5' F5?'15' -4' $21B
&'?A' 4$51' -A5' F5D21-*15614E' :488
?-'-*-'4&2'D15:5F5&-(' F5: 215?(' '&'
-A5' 4D5&'&G' 2FF15??(' R' -A5' 1'&8
:5??)42&&2-1*5' 2&F' 2@6*' A5'1'
-4' -A5' :14@&(' -4' @A4E(' '&' F5B
62*-' 46' E2 5' A5'1?(' -A5' *?2G5
2&F' 2@' 46' -A5' 2&F' 15M*'15' -A5'
42-A' 46' 2 5G'2&:5K' 414&2:'4&'
(F5' 12G'*+' ?*D12

?-2&:5 '? E5E412+ 5(2? 26641F'&G -A5 61'1?-5J2ED 5 46 -A5 D21 '2E5&-21C 15:4G&'-'4& 46 2 65E2 5 A5'1 2DD215&- '& 12G4&5?5 A'?-41C 9

E'F?- 2 -A5 A4&4*1? ?4 '+512 C 2$'?A5F 4& A' 'D(A'? +4?4E ?5:15- C ?@5 5F @'-A F'?:4&-5&-(64E5&-5F ?-' 6*1-A51 +C A'? 64 4@51?(@A4 D15??5F A'E -4 A2?-5& A'? 15-*1& -4 2&F51?(@A515 -A5 6155 2&F ?4:'2 E2&&51? 46 -A5 D54D 5 @515 E*:A E415 :4&G5&'2 -4 -A5'1 -2?-5?(-A2& -A5 15?51$5 2&F ?-2-5 C :515E4&'2 46 -A5 D2&'?A :4*1- A5 C4*&G D1'&:5 ?A215F '& -A5?5 655 '&G?(-4 @A':A('&B F55F(-A5 4$5 46 D 52?*15(2&F 2& '&?-'&:-'$5 2$51?'4& -4 2&C -A'&G 'H5 ?51'4*? 4::*D2-'4&(&2-*12 C F'?B D4?5F A'E 51F'&2&F 2&F ?2+5 2 ?2@ @'-A 15G15- -A5 61'$4 4*? F'?D4?'-'4& 46 -A5'1 ?4&.'&. 2@(@A4('& -A5 '&F* G5&:5 46 ?5 6'?A 2&F 5665E'&2-5 52?5(@2? @' '&G -4 15D4?5 & 4-A51? 2 -A5 'ED41-2&- F*-'5? 46 G4$51&E5&- A5C +5A5 F @'-A E41-'6':2-'4& A'? '&F'66515&:5 -4)42&&2(@A4 :4* F +42?- 65@ D51B ?4&2 2--12:-'4&?(6 2&F @A4 :44 5F -A5 2665:-'4&?

g 21+2,2(&25?(2&4 2@EE > +21:2(5C5? F5 12B G4&(-4E '' 5C JJJ :2D J'' ?5:' $' > 4+5?('F2 F5 Z'E5: &5?(D 2FB > 21'+2C('?-(F5 ?D2&2(-4E '' '+ J'J :' J'$' > 2&F4$2('?-(F5 214? -4E # D :

5-14&' 2(-A5 4&C 65E25 @A4 5$51 ?2-('& A51 4@& 1'GA-(4& -A5 -A14&5 46 12G4&(&5$51 15:5'$5F -A5 A4E2G5 46 :41-5? 2? A5'1 2DD215&-\ -A5 :*?-4E &4- A2$'&G +55& 5?-2+ '?A5F 2- -A2- -'E5(-A5 E'FF 5 46 -A5 -@5 6-A :5&-*1C /V*1'-2(&25?(-4E : '+ : :2D : 2&:2? A2? F5?:1'+5F -A5 :515E4&C 46)42&B &2? 15:4G&'-'4& @'-AUM*'-5 2? E*:A :'1:*E?-2&-'2 '-CJ 2? -A5 &4$5 -C 46 -A5 :2?5 :4* F @21B 12&- 414&2:'4&5?('+ '' :2D HH

- 'ED5J 5?- 645E'&2(K ??2C? 21-C1(?D52H'&G 46)42&B &2(I ':5- 2 -2&-F E* '515 D14 G5&'-2K D*? D'?-4 21*E(5D ::

46 A51 A*?+2&F +C 2 -51&2-'4&? 46 5J:5??'$5 64&F&5?? 2&F '11'-2+ 5,52 4*?C(641 @A':A 2?- -A5 5$'-C 46 A'? :4&F*:- G2$5 A51 -44 E*:A 4::2?'4&

A41- C 26-51 -A5 :515E4&C 2- 212G4??2(-A5 21:AB F*H5 2&&4*&:5F A'? '&-5&-'4& 46 2& 'E E5F'2-5 15-*1& -4 -A5 5-A51 2&F? +C -A5 @2C 46 12&:5 A5 ?4$515'G&?(2?-4&'?A5F 2- -A'? 2+1*D- F5-51E'&2-'4&(*?5F 5$51C 21G*E5&- -4 F'??*2F5 A'E 614E '- A5C 15D15?5&-5F -A5 ' 5665:-? '- E'GA- 4::2?'4& -A5 1'&B :5??)42&&2(-A5& -44 621 2F$2&:5F '& 2 ?-2-5 46 D15GB &2&:C -4 2::4ED2&C A'E A5C D4'&-5F 4*- -A5 'EB D14D1'5-C(2? @5 2? F2&G51(46 :4EE'--'&G A'E?5 6 -4 -A5 A2&F? 46 -A5 15&:A H'&G(@'-A @A4E -A5C @515 &4@ 2- 4D5& @21 2&F -A5C 6'&2 C '&?'?-5F 4& -A5 'ED41-2&:5 46 A' 'D0? 15E2'&'&G 4&G 5&4*GA '& -A5 H'&GF4E -4 +5:4E5 62E' '21 @'-A -A5 *?2G5?(2&F 5?-2+ '?A A'E?5 6'& -A5 2665:-'4&? 46 -A5 D54D 5(4$51 @A4E A5 @4* F 4&5 F2C +5 :2 5F -4 15'G&

-A5?5 21G*E5&-? @515 '&5665:-*2 -A5 '&6 5J'B + 5 D1'&:5(-*1&'&G 2 F526 521 2 'H5 -4 -A5 5&-152-'5? 46 A'? *&A2DDC @'65(2&F -A5 15E4&?-12&:5? 46 -A5 12G4&5?5 :41-5? ?-' '& ?5??'4&(?5- 4*- 614E 2B F1'F(@'-A -A5 @A4 5 46 A'? 5E'?A ?*'-5('& -A5 E4&-A 46 5:5E+5,U 5 56- 51F'&2&F 2&F ?2B +5 2 F'?G*?-5F @'-A -A5 5$'-C 46 A'? :4&F*:-(2&F(-A5 M*55&('& D21-':* 21(6' 5F @'-A E4*1&6* ?4!.' :'-*F5 641 - ' 5 6215 46 -A5 F2*GA-51 @'-A @A4E A'? F5?-'&'5? @515 *&'-5F 9

I $#2<> 0# - $A 9 #= H#+ ##'* ((A 0!$ $ + ' ' #0' ' &$- J A L $ 2@EF '$ 8 + &# 0 8 #

56415 A'? F5D21-*15 641 12&:5(A' 'D(2&J'4*? -4 155?-2+ '?A A21E4&C +5-@55&' -A2- :4*&-1C 2&F D2'&(466515F A'? ?51$':5? -4 A'? 62-A51.'&. 2@ '& &5G4-'2-'&G @'-A 4*'? Z ('6 D4??'+ 5(2 ?5-- 5B E5&- 46 -A5 F'66515&:5? 15?D5:-'&G 2D 5? 51F'B &2&F ?A4@5F ?4E5 15 *:-2&:5 2- '&-1*?-'&G"?4 F5B ':2-5 2 :4E E'??'4& -4 2& 5&$4C '& @A4?5 F'?:15-'4& A5 D 2:5F ?E2 15 '2&:5(@A':A @2? &4- 2*GE5&-5F +C -A5 H&4@& D21-'2 '-C @A':A A' 'D 5&-51-2'&5F 641 -A5 15&:A E4&21:A 9 56415 -A5 21:AF*H5 A2F :14??5F -A5 614&-'51(A4@5$51(A5 @2? 4$51-2H5& +C 2 D2&'?A 5:: 5?'2?-':' &2E5F 51&2 F4 4' (2++4- 46 - 'G*5 F5 *J2(@A4 +14*GA- 6* D4@51? 614E -A5 H'&G -4 A' 'D 641 :4&: *F'&G 2 -152-C @'-A 12&:5(2::4ED2&'5F 2- -A5 ?2E5 -'E5 @'-A D1'$2-5 '&?-1*:-'4&? 46 -A5 E4?- ?-1':- 2&F 'E'-5F &2-*15 5 @2? 5&,4'&5F(E4154$51(-4 -2H5 &4 ?-5D @'-A4*- -A5 2F$':5 46 A'? 15$515&F :42F,*-41(2&F -4 '&B 641E -A5 D2&'?A :4*1- 2- 4&:5('6 F'66515&- D14D4B ?'-'4&? @515 ?*+E'--5F 614E -A4?5 :4&-5ED 2-5F +C A'? '&?-1*:-'4&? 6

A*? 641-'6'5F(-A5 1:AF*H5 A' 'D E2F5 A'? 2DB D5212&:5 2- -A5 15&:A :4*1- '& C4&?(@A515 A5 @2? 15:5'$5F +C 4*'? @'-A -A5 ?2E5 '$5 C 5JD15?.

I &?+$ #* -$ #$# >* **$ > ' -' && ### A $ K$? &? & $ /' +$ &$- J'# G$? G 0> ?##-' $ /' ?# *9 # $' $ + ' #0 ' +# ? * G ?$' ? &$- H A 0$ &$' > / ' $L -$ #$ / ' ' >' " $ >' 0 L " + '## >JJJ &$- J### &' # ' /' ? ' $ G ' # ' ? ' ## A'8$ #0$>' +- /' 6# -$>' *' J## H ' '$ + ' ##' #0 J#J' &$- J' A = 8 + &# ' * ' ((' A' 9 # $' 6# ' / ' # ' H ' ##' + ' : ' #0 ' : ' &$- ' JJ### A1 &?$- ' JJJ##

<;

?'41'? 46 15G21=2? +56415 '-A -A5?5 2E'2+ 5 F'?B D4?'-'4&?(-A5 &5G4-'2-'4&? @515 &4- 4&G '& 15?* -'&G '& 2 F56'&'-'$5 -152-C(2112&G5F -4 -A5 E*-*2 ?2-'?B 62:-'4& 46 -A5 D21-'5?(-A4*GA('& $'4 2-'4& 46 -A5 D1'$2-5 '&?-1*:-'4&? 46 -A5 21:AF*H5 & -A5 D14B G15?? 46 -A5 F'?:*??'4&?(51F'&2&F 15:5'$5F 2F$':5? 614E A'? 5&$4C(-A5 +2-5 4' (-A2- A' 'D @2? -12&?:5&F'&G A'? :4E E'??'4&N '& :4&?5M*5&:5 46 @A':A -A5 H'&G ?5&- 2& 5JD15?? -4 12&:5(*1G'&G A'? ?4&.'&. 2@ -4 2FA515 -4 -A5 ?-1':- 5--51 46 A'? '&?-1*:-'4&? 56415 -A5 E5??5&G51 152:A5F C4&?(A4@5$51(-A5 -152-C @2? 5J5:*-5F *:A '? -A5 D2B &'?A 2::4*&- 46 -A'? + '&F -12&?2:-'4& 9

A5 -152-C(@A':A @2? ?'G&5F 2- C4&?(D1' -A(< (@2? 2112&G5F 4& -A5 +2?'? 46 -A5 E211'2G5 46 A21 5?(-A5 '&62&- ?4& 46 A' 'D(2&F 2*F5(1'&B :5?? 46 12&:5N 2 E211'2G5 @A':A(?5-- 5F +C -A155 ?5$512 -152-'5?(@2? F5?-'&5F &5$51 -4 -2H5 D2:5 A5 14C2 '&62&-? @515 'E E5F'2-5 C -4 2??*E5 -A5 -'- 5? 46 T'&G 2&F b*55& 46 2D 5?(2&F *H5 2&F *:A5?? 46 2 2+1'2 !&-' -A5 :4&?*E E2-'4& 46 -A5 E211'2G5(-A5 15&:A F'$'?'4& 46 -A5 H'&GF4E

I 9 #$ 6# + '#' #0'' - $D *' G '$" '0 #/ ' ?#L &$- 'JJ### A '8 $# ' 6# '/' #-' +- > /' #' ? ' " #$L #' H ' --' 2)E' 2)2 A' # ' $? ' #'#' ?'0 >' $ /' > ' 6# '/' #' ' $+ /' $' " $ >' & +L H '-' 2E3 'A' 0$ &$' > ' +# # /' *' ? ' - - ' 0>' /' $" ' +' ## >' JJJ' ?' -$ # ?G # <$? "?'#' &$- I' J###' &' ###' A' $ #$ $' #' ' #+- 0$0 ' ?$' 8 $ $' +'##' --'E5E'B52 A $ K$' ?' #/ '+# # '$' #0' $ ' && '>' "$ ' +'#' & ' D -$ '#' ? '/# & L &$- 'J'# #

+ ' *' ? ' &?'?# #$

@2? -4 +5 D 2:5F *&F51 -A5 2FE'&'?-12-'4& 46 ?4E5 ?*'-2+ 5 D51?4& &2E5F +C 4*'?' Z (2&F-A5 D2B &'?A *&F51 -A2- 46 -A5 1:AF*H5 A' 'D(41 ?4E5 4-A51 F5D*-C 2DD4'&-5F +C 51F'&2&F D 2:5?' *& 2@6* C ?5'L5F +C 5'-A51 D21-C @515 -4 +5 15?-41. 5FN 2&F 2?- C '- @2?' ?5-- 5F(@'-A 15G21F -4 -A5 F'?D*-5F D14$'&:5 46'-A5 2D'-2&2-5(-A2- -A5 D41-'4& A5 F +C -A5 15&:A ?A4* F +5 G4$51&5F +C 2& 2G5&- 46 T'&G 4*'?(2&F -A5 D2&'?A +C -A5 1:AF*H5 A' 'D 4& +5A2 6 46 51F'&2&F 9

:A '& ?+?-2&:5 $'U2? -A5 -152-C 46 C4&?N 2 -152-C @A':A(@A' 5 '- ?55E5F -4 :4&?* - -A5 '&B -515?-? 46 51F'&2&F(+C ?5:*1'&G -A5 -A14&5 46 2B D 5? 5$5&-*2 C -4 A'? D4?-51'-C(@2? '& 62:- 621 E415 2::4EE4F2-5F -4 -A4?5 46 4*'?(+C D 2:'&G -A5 'EB E5F'2-5 :4&-14 46-A5 D2&'?A E4'5-C *&F51 2 D1'&:5 4$51 @A4E -A2- E4&21:A A5 F 5&-'15 '&6 *5&:5 - '? 'ED4??'+ 5 -A2- ?4 ?A15@F 2 ?-2-5?E2& 2? 51F'B &2&F :4* F A2$5 ?51'4*? C :4&-5ED 2-5F 2& 2112&G5B E5&- @A':A ?*115&F515F 2 -A5 2:-*2 D4@51 '&-4 -A5 A2&F? 46 A'? 1'$2 (614E -A5 E515 :4&?'F512-'4& 46 2F$2&-2G5? ?4 15E4-5 -4 A'E?5 6(2&F F5D5&F5&- 4& ?4 D15:21'4*? 2 :4&-'&G5&:C 2? -A5 E211'2G5 46 -@4 '&62&-? -A5& '& -A5'1 :12F 5?N 2&F -A2- -44 2- -A5 E4E5&- @A5& A'? 21G5 21E2E5&-(?4 4&G D15B D21'&G 641 2 2+1'2(A2F 152:A5F -A2- :4*&-1C(2&F @A5& -A5 152- 2D-2'&(4& -A5 4-A51 M*21-51(A2F 15:5'$5F ?*:A 2::5??'4&? 46 ?-15&G-A 2? 5&2+ 5F A'E

I ? $ >$- + - #- +$#, + '#' --
F) A F5

-4' 2??* E 5' -A5(' 4665&?'$5' 4&' 2-' 52?-' 5M* 2 ' -51E ?' @'-A' -A5' 5&5 E C

4' E '?G'$'&G?' 4&' -A'?' A52F(' A4@5$51(' 2DD521' -4' 8A2$5' 5&-515F' -A5' E '&F?' 46' -A5' ?'G&51?' 46' -A5' -152-C(' @A': A' @2?' :5 5+12-5F' +C' -A5' :4*1-' 2-' C4&?' @'-A' 5$51C' ?A4@' 46' D* + ':' 15,4': '&G(' 2&F' D21-': * 21 C' @'-A' -4*1&5C?' 2&F' -' -?' 46' 155F?(' '&' 'E '-2-'4&' 46' -A5' D2&B '?A' : A'$2 1C ' -' -A5' ?2 E 5' -' E 5(' -A5' 15&: A' H'&G' :4*&-51E 2&F5F' -A5' 5E +21: 2-'4&' 46' 615?A' -144D?' 4&' +421F' 2' 6 55-' 5M*'DD'&G' 2-' -A5' D41-' 46' 5&42' 641' 2D 5?(' 2&F' ?5&-' 41F51?' -4' A'?' G5&512 ?' '&' -2 C' -4' F5?'?-' 614 E' 6*1-A51' 4D512-'4&?' A5' 21: AF*H5' 641B @21F5F' ?' E ' 21' '&?-1*: -'4&?' -4' 4&?2 $4(' 2: : 4 E D2&'5F' @'-A' 2' : 4DC' 46' -A5' D4@51?' '&-1*?-5F' -4' A' E' +C' 51B F'&2&F ' A2-' D1*F5&-' 466': 51(' A4@5$51(' @A5-A51' '&' 4+5F'5&: 5' -4' D15$'4*?' F'15: -'4&?' 614 E' -A5' H'&G(' 2?' D2&'?A' @1'-51?' 266'1E(' 41' 4&' A'?' 4@&' 15?D4&?'+' '-C(' 614 E' 2' $51C' &2-*12 ' ?5&?5' 46' F*-C(' 156*?5F' -4' : 4 E D C' @'-A' -A5' 2E +2??2F410?' 41F51?N F5: 21'&G' R' A5' H&5@' &4' 2*-A41'-C' +*-' -A2-' 46' A'?' 4@&' ?4$515'G&?(' 2&F' -A2-' A5' 65 -' +4*&F' -4' D14?5: *-5' -A5' @21' @'-A' 2 ' A'?' 2+' '-C' -' ' A5' 15: 5'$5F' -A5'1' : 4 E E 2&F?' -4' -A5' : 4&B -121C 9

1' 0$ &$' > ' / ' $" ' 8 $ ' ' *' ? ' # / /' " L
+ ' #' >' JJJ ' &' J### ' &' ### ' #$ # ' G# ?' $ & '&$ # # "'
A 8#$ ' #$' /# $- #' ? ' " $' $' ? ' $+ ' #+ '
#0 JJ#J ' &#' A '8 $# '6# ' ' ' ? /' $ >' # & # ' *'
/ ' #' H '- '2)2 A $&=' ? ' $ &?/ D ' # ' & *# + /' 0>'
& #' #$ # ' ')@' A ' ?#+ ' ?# ' &# & + $ & ' ? '
6# ' / ' #' H ' '##' &?' &?' G # ' "$ /' $' L
JJJ##
, #' &$' - *' *' ? ' D# "(' # L
&& /# "' ' ? ' $" ' # & # >' # ' # "' # ' ? '
?# #$ ' /# $ /' ' ? ' " #$ # ' ' G $ ' ?# ' $ L
$ &?/ D (' / -$ ' # * + / - &' $' *# ' & $# >' 0 '

&F55F(-A5 21:AF*H5?F5?D2-:A5?211'$5F2--A5 $51C-'E5@A5&-A5 D2&'?AG5&512 (A2$'&G?-15&G-A 5&5F A'E?5 6+C 2 15'&641:5E5&-614E -A5 &,?'GA. +4*1'&G G211'?4& 46 215&-4**&F51 5F14 2$2114(@2? D15D215F -4 ?2 C 641-A(2&F -1C A'? 641-*&5 '& +2-- 5 @'-A -A5 5&5EC '-A4*-'6*1-A51F5 2C(A5 D*-'A'? D*1D4?5 '&-4 5J5:*-'4&(2&F(4& 1'F2C -A5 ;S-A'46 D1' < (E21:A5F 4*-'@'-A A'? @A4 5 21EC614E -A5 2&:'5&-@2 ? 46 21 5-2 2 ?D4-5$51 E5E412+ 5 '& A'?-41C 2? -A5 ?:5&5 46 -A5 5J-1241 F'&21C ?*6651'&G? 2&F '&F4E'-2+ 5 :4&?-2&:C 46 -A5 D2&'?A ?4 F'51

A5 142F 2C 2:14?? -A5 6'5 F 46 2&&25(@A515(?5$5&-55& :5&-*1'5? +5641 5(-A5 D1'F5 46 4E5 A2F

$ '# G $/+# * $ ' >
/#** & & # /#L
$ /?$/ & *#/ & # ? /# & # * ?# 0 $?$ (*
0#*G$ 0 # ' ? -$ # ? G # ? + - > / # ? $**$# + * +$&&#/ ?$ &? #& $ / G# ? $ /# " ? * - G # / ?#+ /#/ & #/ ?#+ *0 / & " # ? '$#/# > *$ > $ > G?#&? ? ? ? / #" # #*# $ #*# /0>?#+L *7#?? '# G * / / - # &#- G #' $ > & " # / # - $ /#- L +$&>#'G$ $ $ &$ # ?# " $ $"$# $ > #+$? #K /# * & ? -$ *?# ' > G?#&? ? $? $ /- + - &?$ $& * ? $ $& # " + ' / $ #+/ # * & * ? :

&? + $ &? "$' ?#+" / $ * $? 8 $ $- $# G? ?$ 0 $ #0 $?$ (* & ?# &&$ # # # $ > ? G ? & / ?$' $& / ? G# ?$? /#/ ' # ? ' * - &#$ # & # * + /#L $ / ? G / &$ & > ?$' 0 ! #*# /# 0 / L # "$ - & *$/'$ $" ? '$L #/# > *G? - G ?&/ / + # $ / G?#&? # *$& / - $ - $?$' G$ $ / &? # * & ? > $? # > ? D## G G$?$ * + G &? ? ? / ?# & + +# # $ / G?#&? ? G$ - #0 * ? *$# ?L * /# &?$ " *#

+55&' A*E+ 5F +C -A5 $':-41'4*? 21E? 46 2&&'+2 (9 '& 2 +2-- 5 @A':A(-A4*GA 64*GA- @'-A 621 G152-51 &*E+51?(@2? &4-?4 F5:'?'$5 '& '-? :4&?5M*5&:5? 2? -A2- @A':A -A5 ?2E5 ?:5&5? @515 -4 @'-&5?? '& 2 65@ A4*1? A5 :4'&:'F5&:5 '? :51-2'& C ?'&G* 21M 2&F 4&5 E'GA- 2 E4?- 62&:C -A2- -A5 2:-41? '& -A5?5(65216* -12G5F'5?(*&@' '&G -4 F562:5 -A5 62'1 A2*&-? 46 :'$' 'L2-'4&(A2F D*1D4?5 C ?4*GA- 2 E415 6'--'&G -A52-15 '& -A'? 4+?:*15 2&F ?5M*5?-515F 15G'4&

A5 @52-A51(2 -A4*GA 4& C 2- -A5 2--51 5&F 46 D1' (@2? 5J-15E5 C ?* -1CM -A5 -144D?(&4-@'-AB ?-2&F'&G 4&?2 $4?? 41F51? 4& :14??'&G -A5 1'$51 62&-4(-A5 2&:'5&- *6'F*?(A2F 62' 5F -4 ?*DD C -A5E?5 $5? @'-A ?*6]:'5&- @2-51 641 -A5 E21:AM D21:A5F @'-A A52- 2&F F*?-(-A5C @515 ?44& F'?B -15??5F +C 5J:5??'$5 -AE?-(2&F(2? -A5 +*1&'&G 12C? 46 -A5 &44&-'F5 ?*& +52- 6'51:5 C 4& -A5'1 A52F?(E2&C 46 -A5E(5?D5:'2 C -A4?5 :2?5F '& A52$C 21B E4*1(?*&H F4@& 4& -A5 142F(62'&-'&G @'-A 5J.

I # ? >0# #0 '### & JJ#' , . #'> 6# #0 JJ# &$- J # A M2 G? "#' ? + &# & + $ #M $ $#' *? 0$ $ - &# "? $0 $ & $# ? J$& - # G?#&? # G$ * "? $0 # ?# - " $-?#&$ #& *? -$ * $ > 0 # * >$ / ? U $ # & $/ R G# ? $ >-$ #& $ * & ? & *$& # 8 " #0 '# - F3@ . ' # *#J ? # *? $ &# $ $ $? #"? 0$ D *? *#/

? + / + *$ 0 G ? $ /* +# 0 G $= # +< $ / #& ? + / + ?$+ * $ > ? $+ $+ $ $/# # & " # ? +# *? $ L &# G $ #$ #, #0 #' &$- J## '## . 0 '# +$D /#**#& > # #/ #*>L # "? ?# G# ? ? $ 8 " &# + '# - FE3 . G?#&? ? ?$ $#/ / G '# ?# +$- '# ? /# & # $ /' $0 +#/L G$> 0 G $ $ $ /' =0 #" $

A2*?-'4&' 2&F' 62-'G*5' 4&?2 $4' @2?' ?55&' '&' 5$51C' M*21-51(' 2FE'&'?-51'&G' -4' -A5' &5:5??'-'5?' 46' A'?' E5&(' 2&F' ?-1'$'&G' -4' 15.2&'E2-5' -A5'1' F144D'&G' ?D'1'-?' -' 5&G-A(' -4' 15 '5$5' -A5E(' A5' :4E E2&F5F' -A2-' 52:A' -'0D4D51' ?A4* F' -2H5' 4&5' 46' -A5' '&62&-1C' 4&' A'?' :1*D. D51(' ?5--'&G' -A5' 5J2ED 5' A'E?5 6'+C' E4*&-'&G' 2' 51B E2&' 5&?'G&' +5A'&F' A'E' 4&' A'?' 4@&' A41?5

&' -A'?' @2C(' -A5' @A4 5' 21EC' 211'$5F' 521 C' '&' -A5' 26-51&44&' +56415' 51'G&4 2(' 2'?E2 ' -4@&' 4&' 2&' 5E'B &5&:5' 2+4*-' ?'J-55&' E' 5?' 614E' 21 5-2(' @A515' -A5' &2-*15' 46' -A5' G14*&F' 26641F5F' -A5' D2&'?A' G5&512 ' 2' 62$4*12+ 5' D4?'-'4&' 641' A'?' :2ED' A5' ? 4D'&G' ?'F5?' 46' -A5' A' ' @515' :4$515F' @'-A' $'&5C21F?(' 2&F' '-?' +2?5' @2?' D14-5:-5F' +C' 2' F'-:A' 46':4&?'F512+ 5' F5D-A' 4&?2 $4' ?2@' 2-' 4&:5' -A5' 2F$2&-2G5?' 46'-A5' G14*&F' '?' E5&' @515' ,2F5F' +C' -A5' E21:A' +*-' -A515' @2?' &4' -'E5' -4' 4?5(' 2?' -A5' 15&:A(' @A4' A2F' +55&' F12@&' *D' *&F51' -A5' @2 ?' 46' 2&4?2(' 4&' A'?' F5D21-*15' 614E' 21 5-2(' @515' &4@' 12D'F C' 2F$2&:'&G' ' A2&F?' @515' D*-' '&' 15M*'?'-'4&(' -A5156415(' 641' @'F5&'&G' -A5' -15&:A(' '&' @A':A' -A5C' D 2&-5F' ?A21D.D4'&-5F' ?-2H5?',' @A' 5' -A5' 521-A' @A':A' -A5C' 5J:2$2-5F' 5&2+ 5F' -A5E' -4' -A14@' *D' 2' D212D5-' 46' :4&?'F512+ 5' A5'GA-' 4&' -A5' ?'F5' &5J-' -A5' -4@&' &' -A'?' 12ED21-' A5' E4*&-5F' A'?' '-- 5' -12'&' 46' 21-' 51C(' :4&?'?-'&G' 46' -A'1-55&' G*&?(' 2&F' +5A'&F' '-' F15@' *D' A'?' 641:5?' '&' 41F51' 46' +2-- 5 9

I' 'P '## :#$' ' :#' 9 #$' +'' '#0' ''&$-'JJ'##' *' F@4AF@@' A'8 #&&#$ /# #' A' ' $ >' - ' -# ' -' #0':' -'4E4 A' ? #&$ / ' && '#A $':#$'/# $ ':' 8 $ $-#$ '&$- JJ JJ'#A * '2B'2)' 8# '#

56415' -A5?59' E 4$5 E 5&-?' @515' :4 E D 5-5F' '&' -A5' D2&'?A' :2 E D(' -A5' +1'GA-' 21E ?' 2&F' +2&&51?' 46' -A5' 15&:A' @515' ?55&' G '?-5&'&G' '&' -A5' F'?-2&:5' 2 E 'F' -A5' -2 ' 65&&5 ' 2&F' :2&5.+12H5?' @'-A' @A':A' -A5' :4*&B -1C' @2?' -A':H C' :4$515F ' ?' ?44&' 2?' -A5C' A2F' :4 E 5' '&' $'5@' 46' -A5' D2&'?A' 5&:2 E D E 5&-(' -A5C' @515' +14*GA-' -4' 2' A2 -(' @A' 5' 2' :4*&:' ' 46' @21' 2?' :2 5F' -4' F5-51 E '&5' -A5' 5JD5F'5&:C' 46' G'$'&G' +2-- 5' -A2-' 5$5&'&G ' A5' *H5' 46' 5 E 4*1?' @4* F' A2$5' F5B 65115F' '-' -' ' -A5' 64 4@'&G' E 41&'&G(' 2?' -A5' F2C' @2?' 2 152FC' 621' ?D5&-(' 2&F' 2 4@5F' &4' -'E 5' 641' 15:4&B &4'-1'&G9'-A5' D4?'-'4&' 46' A'?' 5&5 E C' *-' $5?' F0 .' UG15(' A2&F'5*' -A5' :4 E E 2&F51' 46' -A5' @'??(' 2&F' ?4 E 5' 4-A51' 466':51?(' @515' 641' 'E E 5F'2-5' 2:-'4&(' 15B D15?5&-'&G' -A5' 'E D41-2&:5' 46' &4-' +2 H'&G' -A5' 'E D2B -'5&:5' 46' -A5' ?4 F'51?(' @A4' @515' 2 ' A4-' 641' -A5' 2?B ?2* -' &' -A5' :4*1?5' 46' -A5' F5+2-5(' UG15' @2?' ?4' E *:A' A52-5F' 2?' -4' -A14@' 4*-' ?4 E 5' 12?A' -2*&-?' 4&' -A5' :4*12G5' 46' -A5' $':514C(' @A':A' -A5' 2--51' @4* F' A2$5' 2$5&G5F' 4&' -A5' ?D4-(' A2F' &4-' A'?' 21E' +55&' 21B 15?-5F' +C' 4*'?' F0 1?' 5' A2F' -A5' @52H&5??(' A4@B 5$51(' -4' ?*6651' -A5 E' -4' :A2&G5' A'?' :44 51' D*1D4?5(' 5J: 2'E '&G(' R' 5' @' ' 6'GA-' -4.&'GA-' -A5&(' 2&F' D51B A2D?' -A4?5' @A4' $2*&-' -A5' 4*F5?-' @' ' +5' 64*&F' -4

8# '# ' $> ' ?$ ' ? ' ?$/' $' /# &? V' ?# ' $ &# ' + / ' *' ? $ /' $0 #&# ' #+$' +$ D' & # '" $' - # # ' G?#&?' ?$/' + ' ?$ ' & ' # ' $ # ' ' *$ ' # ' /# ' G$ ' '#' /' ? ' # &?+ ' $ ' ? ' 0$ ' *' $* ' ?# ' $&& /# '" ' ? ' $+ ' ? ' ?# ' ! ' ?$ ' ? ' '#& >' G$ ' $? ' $ /' &$+ ' # ' " $' G# " ' ' ? ' D# ' *' ? ' - $& #& ' $+ '" ? ' 0 ' &$-L & + +$ / ' ' ? ' '$ ' *' $# ' *' ? ' $" ' 4:' &# ? ' - ' 0 ' '$ + /' $ /

-1*?-' E415' -4' -A5'1' ?D*1?(' -A2&' -A5'1' ? @ 4 1 F ? 2 ' D15B F':-'4&' +'--51 C',*?-'6'5F'+C' -A5'5$5&- 9

A' 5' -A'?' F'?D*-5' @2?' G4'&G' 4&(' 4&?2 $4' G2'&B 5F' -'E5' 641' E2H'&G' -A5' &5:5??21C' F'?D4?'-'4&' 46' A'?' -144D?' &' -A5' :5&-15' A5' D 2:5F' A'?' 51E2&' 2*JB ''21'5?(' 21E5F' @'-A' -A5'1' 4&G' D'H5?(' 2&F' 4&' 52:A' @'&G' -A5' D2&'?A' '&62&-1C' *&F51' -A5' :4EE2&F' 46' 5F14' 2$2114(' '5G4' F5' 215F5?0U' L2114(' 2&F' 4-A51' ' *?-1'4*?' :2D-2'&?' A5' F565&:5' 46' -A5' 21B -' 51C' @2?' :4EE'--5F' -4' -A5' 56-' @'&G' ' :4&?'F51B 2+ 5' +4FC"46' E5&.2-.21E?(' '&: *F'&G' -A4?5' 15:5&- C' 5M*'DD5F' 614E' -A5' ?D4' ?' 46' *$4(' @2?' F12@&' *D' @'-A'&' -A5" '&-15&:AE5&-?(' '&' 2' M*21-51' 26641F'&G' 2' :4&$5&'5&-' 4D5&'&G' 641' 2' ?2!C(' 2&F' D 2:5F' *&F51' -A5' 41F51?' 46' 5&F4L2' 2&F' 2+1':'4' 4 4&&2(' @A4?5' +14-A51' 14?D514' 2&F' 5F14' F5' 2' 2L' -44H' :A21G5' 46' -A5' 'GA-' :2$2 1C(' @A':A' @2?' D4?-5F' @'-A4*-' -A5' '&5?' -4' 2&&4C' -A5' 2F$2&:5' 46' -A5' 5&5EC(' 2&F' 2:-' 4&' 2&C' D4'&-' 2?' 4::2?'4&' E'GA-' 15M*'15' 2$'&G' :4EB D 5-5F' A'?' D15D212-'4&?(' -A5' D2&'?A' G5&512' :44 C' @2'-5F' -A5' 2??2*-' 46' -A5' 15&:A

A5' *H5' F5' 5E4*1?' A2F' E21?A2 5F' A'?' 641:5?' '&' 2' 51C' F'66515&-' 41F51' 5' F'?-1'+*-5F' -A5E' '&-4' -A155' +2-- 5?' 41' F'$'?'4&?(' ?-2-'4&'&G' A'?' A52$C' A41?5(' :4ED4?'&G' 2 -4G5-A51(' 2?' 4&?2 $4' F5: 215F(' !' -A5' 6'&5?-' +4FC' 46' :2$2 1C' ?55&' 641' E2&C' C521?' '&' -2 C(K' *&F51' -A5' :4EE2&F' 46' 4*'?' F0 1?(' 4&' -A5' 1'GA-

R 1' $ + ' ' ' +'##' '/0 -' +'#'' -'F((A ' # &''###'A'8$+# ' 6# ' /' 8 $# ' 6# ' /' #'H &'-' $ & ' +''' --'45@' 45B' 2)
A 8$# $ /' #'$ # ' /' $ &

A5' ?5:4&F' 2&F' :5&-15' F'$'?'4&(' 641E5F' ?4E5@A2-' '&' 1521' 46'-A5' 1'GA-(' @2?' E2F5' *D' 46'-A5' @'??' 2&F' 2?:4&' '&62&-1C(' A52F5F' AC' -A5' +12$5' A2&F'5*N' 2&F' A'?' 56-(' :4&?'?-'&G' :A'56 C' 46' A'?' 'GA-' :2$2 1C(' 2&F' F12@&' *D' 'H5' -A5' 2?-(' ?4E5@A2-' '&' -A5' 1521' 46' -A5' D15:5F'&G(' @2?' '&-1*?-5F' -4' UG15 9

-' @2?' @'-A'&' A2 6' 2&' A4*1' 46' ?*&?5-' @A5&' -A5' *H5' F5' 5E4*1?' G2$5' 41F51?' 641' -A5' 2--2:H(' 2&F(' D*--'&G' A'E?5 6' 2-' -A5' A52F' 46' -A5' G5&F21E51'5' 4&' -A5' 1'GA-(' ?D*115F' 2-'6*' 'G2 4D' 2G2'&?-' -A5' D2&'?A' 56-' A5' A4?-' 5' 21E'5?' @515' &521 C' 5M*2 (' 2E4*&-B '&G' -4' +5-@55&' ?'J' 2&F' ?5$5&' -A4*?2&F' E5&' 52:A' A5' 15&:A' @515' ?*D51'41' '&' -A5' &*E+51' 2&F' :4&B F'-'4&' 46'-A5'1' :2$2 1C('1'?'&G' -4' 2' -A'1F' 46'-A5'1'@A4 5' 641:5N' @A' 5' 4&?2 $40?' ?-15&G-A' 2C' :A'56 C' '&' A'?' '&62&-1C(' @A':A' A2F' 2:M*'15F' 2' 5??4&' 46' -2:-':?' *&F51' A'E' -A2-' 12'?5F' '-' -4' 2' 5$5' @'-A' -A5' +5?-' '&' *14D5

?' -A5' 15&:A' 2F$2&:5F(' -A5' G*&?' 4&' -A5' D2&'?A' 56-' D4*15F' 2' '$5 C' 6'15' '&-4' -A5'1' 12&H?(' @A5&' 2' ?D21H' 2::'F5&-2 C':4EE*&':2-'&G' @'-A' -A5' E2G2L'&5' 46' D4@F51(' -A5' @A4 5' + 5@' *D' @'-A' 2' -15E5&F4*?' 5JD 4?'4&' A5' D2&'21F?' @515'6' 5F' @'-A':4&?-51&2B -'4&'N' +*-' 4&?2 $4(':4&$51-'&G' -A5' E'?641-*&5''&-4' 2' *:HC' 4E5&(' :2 5F' 4*-(' 4*12G5(' ?4 F'51?(' -A5?5' 215' -A5' +52:4&' 'GA-?' 46'$':-41C'P @5' A2$5' &4' &55F' 46' 4*1' G*&?' 2-' : 4?5' M*21-51? K

&' -A5' E52&' -'E5(' -A5' 15&:A' $2&(' *&F51' 5.

1' ? #&$ / ' B ' $-#$ ' F@4A F@@' A ' $' $ ' :' &$- JJ'# A ' P '## :#$ ' * * ' 2)

E4*1?(2F$2&:'&G 12D'F C *&F51 -A5 F21H : 4*F? 46 ?E4H5(@A':A 14 5F A52$' C 4$51 -A5 6'5 F(@515 *&B 5JD5:-5F C +14*GA- *D +C -A5 F55D -15&:A(46 @A4?5 5J'?-5&:5 -A5C @515 *&2DD1'?5F 4E5 46 -A5 A41?5 @515 D15:'D'-2-5F '&-4 '-(2&F 2 15:5'$5F 2 ?*FF5& :A5:H(*&-' 5E4*1?(6'&F'&G '- 'ED4??'+ 5 -4 641:5 -A5 @41H? '& -A'? M*21-51(14F5 2 4&G -A5'1 614&- '& ?521:A 46 ?4E5 D12:-':2+ 5 D2??2G5 & F4'&G -A'?(A5 &5:5??21' C 5JD4?5F A'? 6 2&H -4 -A5 62-2 2'E 46 -A5 D2&'?A 21M*5+*??'51? ?A4-'6'14E 4&5 46 -A5E -44H 5665:- 4& -A5 *&641-*&2-5 C4*&G &4+ 5E2&(2&F A5 65 E41-2 C @4*&F5F 614E A'? ?2FF 5

- -A'? ,*&:-*15(-A5 @'?? 2&F 2?:4& '&62&-1C(+1'?H C E4$'&G *D -4 ?5:4&F -A5 2--2:H 46 -A5 &4@ F'?41F515F A41?5(211'$5F +56415 -A5 '&-15&:AE5&-? ! &F'?E2C5F +C -A'? 641E'F2+ 5 +211'51(-A5'1 :4EB E2&F51 A2&F'5* E2F5 -A5 E4?- F5?D512-5 2--5ED-? -4 641:5 2 D2??2G5 M +*- -A5 44?5 521-A 615?A C -*1&5F *D 26641F5F &4 A4 F -4 -A5 655-(2&F A'? E5& @515 :4ED5 5F -4 15:4' 614E -A5 F5&?5 2112C 46 51E2& D'H5? @A':A +1'?- 5F 4$51 -A5 ?* E E'- 46 -A5 +152?-B @41H A2&F'5*(-A5'1 52F51(E2F5 5$51C 56641- -4 12 C 2&F +1'&G -A5E +2:H -4 -A5 :A21G5(+*- '& -A5 2:- 46F4'&G-A'?@2? A'- +C 2+2 (@A':A?-15-:A5F A'E '65 5?? '& -A5 F'-:A A'? +*1&'?A5F 21E?(2&F -A5 ?&4@.@A'-5 D *E5? 2+4$5 A'? A5 E5-(E2H'&G A'E 2 :4&?D':*4*? E21H 641 -A5 5&5EC9(@A4 @515

@2? &4@ :4&6*?'4& A5 D2&'?A 21M*5+*?B ?'51?(?:155&5F +C -A5'1 F565&:5?(D4*15F 2 G2 '&G 6'15 '&-4 -A5 F5&?5 E2??5? 46 -A5 5&5EC9(@A4 @515

E '&G 5F -4G5-A5*' '&F'?:1'E '&2-5 C(A41?5 2&F 644-M @A' 5(-A5 52F51? +5'&G F4@&(&4 4&5 ?55E5F :2B D2+ 5 46 +1'&G'&G -A5E -4 41F51 (- -A'? :1'-':2 E4E5&-(4&?2 $4(@A4?5 52G 5 5C5 -44H '& -A5 @A4 5 4D512-'4&? 46 -A5 6'5 F(41F515F 2 G5&512 :A21G5 2 4&G -A5 '&5(2&F -A5 D2&'21F?((52D'&G -A5'1 '&-15&:AE5&-?(F5?:5&F5F @'-A -A5 6*1C(46 2& 2$2 2&:A5 4& -A5'1 645?(@A4?5 @2$51'&G :4 *E&?(:4ED 5-5 C +14H5& +C -A5$'4 5&:5 46 -A5 ?A4:H(@515 ?5'L5F @'-A 2 D2&':2&F 6 5F(?:21:5 C 46'51'&G 2&C 15?'?-2&:5 4*'?F0 1?(2- -A5MA52F 46 ?*:A 46 -A5 E5&.2-.21E?? 2? :4* F 64 4@ A'E(@5&- 466 '& 4&5 F'15:-'4&(2&F $5? F0 UG15(@'-A A'? 'GA-:2$2 1C(@A':A A2F A21F C:4E5 '&-4 2:-'4&('& 2&4-A51M -A*? 6* C $51'6C'&G -A5 4E'&4*? D15F':-'4& 46 A'? :4EB E2&F51 A5 ? 2*GA-51 65 E4?- A52$' C 4& -A5 @'?? 2&F 51E2& 644-(@A4E -A5 :2$2 1C *&F51 5&F4L2 2&F 5F14 F5 2 2L 14F5 F4@&' 2&F :*- -4 D'5:5? @'-A4*-?D21'&G(-' -A5 ?A2F5? 46 5$5&'&G ?A'5 F5F -A5E 2- 5&G-A 614E -A5'1 D'-' 5?? D*1?*51? 9 14?D514 4 4&&2 D*?A5F 4& -4 -A5 15&:A5&:2EDB E5&-(@A515 A5 64*&F -A5 -2+ 5? '& -A5 F*H50? -5&- ?D152F 641 A'? 5$5&'&G 15D2?-M 46 @A':A -A5 -2 '2& G5&512 2&F A'? 64 4@51? F'F &4- 62' -4 E2H5 G44F 2::4*&- -1'6 '&G '&:'F5&-(-A2- @5 ' *?-12-5? -A5 ?*FF5& 15$51?5? 46 @21

? / 8 $-#$ 0# - $A8 #&&#$ /# # 2 &$- JJ' A8$+# 6# / /($#$= #'--4E4 4E(A $ & + ' ' --<45B 35) A 8 $# 6# / # H + / $ " &?' ' S$- --2)2 2)F A $ + + / + $ & # + ## # &' '### J'#A - P '## :#$:#

A5 D152- 2D-2'& D2??5F -A5 &'GA- 4& -A5 6'5 F 46 +2-- 5(@A':A 4& -A5 64 4@'&G E41&'&G D15?5&-5F 2 GA2?- C ?D5:-2: 5 46 -A5 FC'&G 2&F -A5 F52F 415 -A2& 15&:A 215 :4ED*-5F +C -A5 +5?- 2::4*&-? A2$5 62 5& A5 4??' 46 -A5 D2&'21F?(:4$515F 2?' -A5C @515 +C -A5'1' F565&:5?(@2?' '&:4&?'F512+ 5 9 -A5 5&5EC?' 21-' 51C(:4&?'?-'&G 46 -A'1-55&'D'5:5?(A'?' +2GG2G5(2&F E4?- 46 A'?' :4 4*1?(65 '&-4 -A5'1' A2&F? 5$51 @2?' -A515 2 E415 :4ED 5-5 $':-41C(2:A'5$5F -44 @'-A'&' -A5 ?D2:5 46 '-- 5 E415 -A2& 2& A4*1 A5 +4FC 46 -A5 *&641-*&2-5 5E4*1?(@A':A @2?' 15:4G&'?5F +C 4&5 46 A'?' D2G5?' 614E -A5 1'&G?' 4& -A5 6'&G51?(@2?' 64*&F *&F51 2 A52D 46 ? 2'&(E*:A F'?6'G*15F -2DD5215F -A2- A5 A2F 15:5'$5F -A155 ?5$512 @4*&F?(F'?D14$'&G('6 &55F @515(+C A'?' A4&4*12+ 5 F52-A -A5 '&,*1'4*?' -2*&-?' 46 UG15 4&?2 $4 @2?' 2665:-5F 5$5&' -4 -521?' 2- +5A4 F'&G -A5 E*-' 2-5F 15E2'&?' 46 A'?' C4*&G 2&F G2 2&- 2F$51?21C

g)4$'" '-?5(64 F@@ A 21'+2C(4ED5&F '?-(F5 ?D -4E ''' '+J'J :2D J$ > 5E2 F5L('?-(F5 4? 5C5? 2-4 :2D JJJ > 5- 21-C1(D*? D'?- 5D : : $' > 5E F5 5*12&G5(:A $ 4 2::4*&-(-A2- H&4@ 4U D2:5? -A5 15&:A 4?? ?4 4@ 2? 4EEE 21'+2C 12'?5?'- -4 (@EE 2&F -A5 15&:A 215:A2 5 5*12&G5 12-5? -A2- 46 -A5 @'?? 2 4&5 2- @EEE 2 14*&F 5J2GG512-'4& &4- 152F'C 2:: :4*&-5F 641(2? A5 A2F *&F4*+-5F 2::5?? -4 -A5 +5?- E52&? 46 '&8 641E2-'4& A5 D2&'21F? @515 -44 @5 ?:155&5F -4 ?*?-2'& E*:A '&,*'C(2&F &4 5?-'E2-5 E2H5? '- E415 -A2& 2 A*&F15F H' 5F(2&F ?4E5 :4&?'F512+C 5?? A5 4FF? 215 '&F55F ?-21-B '&G(+*- &4- 'ED4??'+5 2? -A5 D2&'21F? @515 &4- E*:A 5JB D4?5F +C D51?4&2 :4A?'4& @'-A -A5 5&5EC('E-' -A5 2--51 @515 -A14@& '&-4 -44 E*:A F'?41F51 -4 -A'&H 46 2&C -A'&G +*- 5?:2D5 A5 E415 -A2& *?*2 :4&6*?'4& 2&F F'?:15D2&:C '& -A5 $21'4*? ?-2-5E5&-? 46 -A5 D21-':* 21? 46 -A'? 2:-'4& E2C D14+2+C +5 2-B -1'+*-5F -4 -A5 2-5&5?? 46 -A5 A4*1(2&F 'ED5165:- 'GA- :4&?5B M*5&-C('& @A':A '- @2? 64*GA-

@A4(' @A2-5$51",*FGE5&-' E2C' +5' 641E5F' 46' A'?' :2B D2:'-C' 2?' 2' 52F51(' @2?' 2 4@5F' -4' A2$5' 2 ' -A5' M*2B '-'5?' @A':A' +5 4&G' -4' 2' -1*5' H&'GA-' '-A' A'E' D51'?A5F' -A5' 2?-' ?:'4&' 46' -A5' ' *?-1'4*?' A4*?5' 46' 1E2G&2:' 4&?2 $4' 41F515F' A'?' 15E2'&?' -4' +5' :4&$5C5F' -4' 21 5-2(' @A515' -A5C' @515' 2'F' '&' -A5' :5E5-51C' 46' -A5' :4&$5&-' 46' -' 12&:'?(' @'-A' 2 ' -A5' A4&4*1?' F*5' -4' A'?' A'GA' ?-2-'4& 9

A5' D2&'?A' :4EE2&F51' 4?-' &4' -'E5' '&' 64 4@'&G' *D' A'?' + 4@(' @5 ' 2@215' -A2-' '-' '?' M*'-5' 2?' F'66':* -' -4' 'ED14$5' 2' $':-41C' 2?' -4' @'&' 4&5' A5' 15&:A' A2F' 1*?A5F' '&-4' +2-- 5' @'-A' -44' E*:A' D15:'D'-2-'4&' -4' 2G155' 4&' 2&C' D 2&' 46' 4D512-'4&?(' 41' 2&C' D4'&-' 4&' @A':A' -4' 12 C' '&' :2?5' 46' F5652-' A5C' 2::41F'&G C' ?:2--515F' '&' F'66515&-' F'15:-'4&?(' 2&F' 5F14' F5' 2' 2L' @2?' F5?D2-:A5F' '&' D*1?*'-' 46' 4*'?' F0 1?(' @A4' -A15@' A'E?5 6' '&-4' 5&4?2(6' @A515' A5' H5D-' -A5' 5&5EC' 2-' +2C' 641' E2&C' E4&-A?' 4&G51' 215F5?' H5D-' : 4?5' 4&' -A5' ?:5&-' 46' 5G15(' @A4(' 6'&F'&G' -A5' G2-5?' ?A*-' 2G2'&?-' A'E' @A515$51' A5' D2??5F(' 2-' 5&G-A' -44H' ?A5 -51' '& 25-2' 4&' -A5' 5J-15E5' D4'&-' 46' -A5' 52D4B '-2&' -511'-41C' A515' A5' 5&F52$4*15F' -4' 12 C' -A5' ?:2--515F' 15 ':?' 46' -A5' 6'5 F' 46' 51'G&4 2(' 2&F' -4' 5?B -2+ '?A' 2' ?-14&G' D4?'-'4&(' 614E'' @A':A' -A5' 15&:A(' @A5&' ?-15&G-A5&5F' +C' 615?A' ?*DD '5?' 614E' A4E5

1' ; # $ $' :#/$ ' / ' -$ ' 0' +'#' -' A 'P '## ' :# ' * F@@ A $ ' 6# 'M/C -$" ' +' '###' --' F(3' F(5 A $' :# $' /# $L ' :' * '2)' A' +$ / K' ' &$-'& JJJ#

C' -' @2?' -4' -A'?' ?2E5' :'-C' 46' 5&*?'*E' -A2-' -A5' 12?A' 2&F' *&B 641-*&2-5 2114' E2F5' A'?' 15B -152-(?4E5' ?5$5&-55&' :5&-*1'5?' 9 +56415(614E' -A5' + 44FC' 6'5 F' 46' 2&&12' '$' '?-' '+UJJ''' :2D' J 'J' 9

E 'GA-' 15:4 E E5&:5' 4D512-'4&?' 641' -A5' 15:4$51C' 46' -A5' H'&GF4 E

A5' F2C' 26-51' -A5' +2-- 5' 46' 51'G&4 2(' -A5' D2&B '21F?' 15:5'$5F' -'F'&G?' 46'2&4-A51' $':-41C(' ?:21:5 C' 5??' 'E D41-2&-(' G2'&5F' 4 51' -A5' 15&:A' '&' 2 2+1'2(' -A5' D15:5F'&G' @55H 9' A5' 21E C' ?5&-' 4*-' *&F51' 41-4.' :211514' A2F' 152:A5F' -A2-' :42?-' 521 C' '&' 21:A' N +*-(' ?44&' 26-51' '-?' 211'$2 (' '-?' G2 2&-' :4 E E2&F51' 65 ' ' ' 2&F' F'5F X' A5' FC'&G' G5&512 ' &2 E 5F' 4&' 51B &2&F4' F5' &F12F2' 2?' A'?' ?*::5??41N' 2&F' -A'?' 466':51' :4E+'&'&G' A'?' 641:5?' @'-A' -A4?5' +56415' '&' -A5' :4*&B -1C' *&F51' 21F4&2' 2&F' 5&2$'F5?(' 5&:4*&-515F' -A59' 15&:A' :4 E E2&F51' 0 *+'G&C' '&' 2' D'-:A5F' +2-- 5(' &4-' 621' 614 E' 5E '&212(' 4&' 1'F2C' -A5' ;<?-' 46' D1' ' -' 2?' &521' -A5' ?2 E 5' ?D4-' 4&' @A':A' -A5' 2--51' +2F' -@':5' +52-5&' -A5' D2&'21F?' * -' -A5' ?-21' 46' 12&:5' @2?' 4&' -A5' @2&5(' 2&F' -A5' G2 2&-' 4 F' 46 :51' A2F' -A5

I' ' P '## :#$' ' :# E- & 'A' $ > ' D*?' -#=' $ ' -'&& '##A ? ' / ' 8 $-#$ '&' JJJ

#/$>' $>' 8 #&&#$ /# #' $L /# "' ' / 0' ' +0 (' /# & ' # '$'G '$' ? ' G' '#& # ' G$' 0 ' /' '0'$' &D>' /$>' ' ? ' -$ #$ / ' $&L & /# "' ' 8$# $ /' #' G$' L "$ / /' * +' ?#' #+' 0>' ? ' &?' G# ?' + ' - ## ' / $/' ?$' ' ' '/($ #$' +'#' -'4E(A #'$# ' / ' ' /(-$" ' +'#' -'4(3

' 9 #$' 6# ' / '6 $ / ' +'#' #0':' &'#'## JJ#' 'A' ' P '## :#$' ' :# ' * 'F@E

(? ' $/ ' +$>' - ?$-' L & &' ? ' /# # " # ? /' -$ ' - $> /' # ' ? ' # ?' G$' 0>' # ' &$ ' /' *' $L +$' 6' G$' *' 0 ' $#$ ' #"# '0 # "' / & / /'* +' ? ' $ &# ' 8 ' ? ' *'= =' &$ " $' ? '8 $' $- $#' $ /' ? '?$/' +$ # /' # <' $ /' ?# ' & !/ '- 0$0 >' & + + /L /' ?#+' $' + &?' $' ?# ' +# # $ >' $ ' ' ? ' $ $0 #$ ' & +L +$ /' G?#&?' #' G$' ?#"? >' #+L - $ ' ? /' 0' # /' ' G? ' G /' +$# $#' $' " /' / $ /# "' G# ?' ? ' & + +$ / =# =&?# *<' $' ?# "' ' $ >' ' & ' $+ "' ? ' ?$ "? >' 0# # >' *' $ #

<=

E41-'6':2-'4& -4 ?55 A'? '-- 5 :41D? 46 $5-512&? : E .
D 5-5 C 14*-5F 26-51 2 ?A21D 5&G2G5E5&- 46 5?? -A2&
2& A4*1(@A' 5 A5 A'E?5 6 @2? 15-1'5$5F @'-A F'66'B
:* -C 614E -A5 A2&F? 46 -A5 5&5EC +C -A5 $2 4*1 46
A'? :4--'?A G*21F 9

A5 152- 2D-2'& 2&F A'? 21EC(A'GA C 5 2-5F
@'-A -A5 &5@? 46 -A'? 641-*&2-5 5$5&-(@A':A 2&&'B
A' 2-5F -A5 15&:A D4@51 '& 2 2+1'2(+5G2& -A5'1
E21:A 4& 2D 5?(2+1':'4 4 4&&2 A2$'&G +55&
6'1?- F5-2:A5F '&-4 -A5 +1*LL'' -4 15:5'$5 -A5 ?*+B
E'??'4& 46 -A5 D54D 5 '& -A2- M*21-51 A5 -'F'&G?
+6 -A5 $':-41C A2F ?D152F 621 2&F @'F5(2&F(2? 4&.
?2 $40? 21EC 2F$2&:5F(-A5C +5A5 F -A5 5&?'G&? 46
12G4& 6 42-'&G 614E -A5 +2-- 5E5&-? 46 -A5 -4@&?
D4& -A5'1 14-5(@A' 5 -A5 '&A2+'-2&-? :2E5 641-A -4
G155- -A5 :4&M*5141(52G51 -4 -5?-'6C -A5'1 F5$4-'4&
-4 -A5 D2&'?A :2*?5 A5 21EC A2 -5F 2- 5&5.
$5&-4 2&F -A5 G5&512 ?5&- A'? ?*EE4&? -4 -A5 :'-C
46 2D 5?('&$'-'&G '- '& -A5 E4?- :4*1-54*? -51E? -4
15?*E5 '-? 2&:'5&- 2 5G'2&:5 -4 -A5 5G'-'E2-5 +12&:A
46 12G4& - @2? A21F C -4 +5 5JD5:-5F -A2- -A5
2 5G'2&:5 46 2 D54D 5(@A4 A2F ?4 4&G ?55&' -A5'1
:4*&-1C ?5- *D 2? 2 E515 ?-2H5 641 D4 '-':2 G2E5B
?-51?(?A4* F ?'- $51C : 4?5 C *D4& -A5E(41 -A2- -A5C
?A4* F :215 -4 D51' -A5'1 '$5? 4& -A5 -12&?651 46 F
:14@& @A':A A2F ?A'6-5F 4& -A5 A52F? 46 A2 6 @

A P '## : * F@@ A ? $&& * * C =
$ > -'&& '# A ? / 0#" >C '#& # $ + # $ $ #
8 $-# $ &$- JJJ A : $= $ ## &?$- ## $ / J# * ?#
$ 6# / # H + '# 6# >
-- G: A F5F

F4L5& D14D1'5-41? '& 2? E 2&C ?*::5??'$5 C521? 9 '-A -A5 ?2E5 F*:-' 5 5&-A*?'2?E(-A5156415(@'-A @A':A -A5C G155-5F -A5 2::5??'4& 46 A21 5? 41 4*'?Z (' -A5C &4@ @5 :4E5F -A5 15?-412-'4& 46 -A5 2&:'5&- FC&2?-C 46 12G4& 2&F F5D*-'5? 614E -A5 D1'&:'D2 &4+' '-C 2&F :'-'L5&? @2'-5F 4& -A5 152- 2D-2'& 2- :5112(@A515 -A5C -5&F515F A'E -A5 H5C? 46 -A5 :'-C(2&F 15M*5?-5F -A5 :4&6'1E2-'4& 46 -A5'1 1'GA-? 2&F D1'$' 5G5?

4&?2 $4(A2$'&G D14E'?5F -A'? '& -A5 &2E5 46 A'? 14C2 E2?-51(4& -A5 64 4@'&G E41&'&G(-A5 <=-A 46 2C(' < (' E2F5 A'? 5&-12&:5 '& G152- ?-2-5 '&-4 -A5 :2D'-2 (52$'&G A'? 21EC @'-A4*-' -A5 (@2 ? 5 @2? 5?:41-5F +C -A5 E ' '-21C 46 -A5 :'-C *&F51 2 14C2 :2&4DC +41&5 +C -A5 F5D*-'5? A5 ?-155-? @515 ?-15@5F @'-A 6 4@51?(-A5 5F'6':5? F5:4B 12-5F @'-A 2DD14D1'2-5 5E + 5E ? 2&F 9F5$':5?(2&F @152-A5F @'-A9 +2&&51? 5E + 2L4&5F @'-A -A5 *&'-5F 21E? 46 12G4& 2&F 2D 5? ? A5 D2??5F 2 4&G(-A5 :'-C 1*&G @'-A -A5 2:: 2E2-'4&? 46 :4*&- 5?? E* -'-*F5? @A4 -A14&G5F -A5 ?-155-?(@A' 5 5$51C @'&F4@ 2&F A4*?5-4D @2? 6' 5F @'-A ?D5:-2-41? 52G51 -4 +5A4 F -A5 E2& @A4(@'-A ?:21:5 C 2&C 4-A51 15?4*1:5? -A2& -A4?5 46 A'? 4@& G5&'*?(A2F ?4 4&G F56'5F(2&F 2- 5&G-A :4ED 5-5 C 64' 5F(-A5 D4@51 46 12&:5

I # & 2(5(' ? & - * / #& # H /#L $- ?$/ -$ / # ? $ / ? $? #& - #'$?$ / * ? D# "/ + # ? - # & /# $ / -? $+ #+ ?$/ - 0$0 >&?$ " / /# $ / ?$: +$?$ * *

<= ;

&' -A5' 64 4@'&G' F2C' 2' F5D*-2-'4&' 46'-A5' &4+' '-C' 2&F' D54D 5' @2'-5F' 4&' -A5' 152-' 2D-2'&' 2-''A'?' M*21B -51?(' 2&F' -5&F515F' A'E' -A5' *?*2 ' 42-A?' 46' 2 5G'2&:5' 646' A'?' E2?-51 ' T'&G' 51F'&2&F(' @A4?5' 2::5??'4&' 6'&2 C' : 4?5F' -A5' ?51'5?' 46' 15$4 *-'4&?' @A':A' A2F' ?4' 4&G' 2G'-2-5F' -A'?' *&A2DDC' :4*&-1C 9

A5' :'-C' 46' 2D 5?' @2?' :4 E E 2&F5F' +C' -@4' ?-14&G' 641-15??5?' ?-' ' A5 F' +C' -+5' 15&:A(' @A':A(' +5'&G' @5 ' $':-*2 5F' 2&F' ?*DD '5F' @'-A' 2 E E *&'-'4&(' ?A4@5F' &4' F'?D4?'-'4&' -4' ?*115&F51 ' A5' 152-' 2D-2'&' F5-51B E'&5F(' -A5156415(' -4' 15?51$5' 2' ?E2 ' :41D?' 641' -A5'1' 15B F*:-'4&(' @A' 5' A5' ?5&-' 641@21F' -A5' E2'&' +4FC' 46'A'?' 21E C' -4' +5?'5G5' 25-2% +*-' -A5' D2&'?A' '&62&-1C' 156*?5F' -4' E21:A' *&-' ' -A5' A52$C' 211521?' ?*66515F' -4' 2::*E* 2-5' -A14*GA' -A5' &5G 'G5&:5' 46' -A5' G4$51&B E5&-' @515' F'?:A21G5F% 2&F' 4&?2 $4(' 2612'F' 46'2@2B H5&'&G' -A5' E*-'&4*?' ?D'1'-' @A':A' A5' A2F' 4&:5' 64*&F' ?4' F'66':* -' -4' M*5 (' @2?' 4+ 'G5F' -4' :4&-5&-' A'E?5 6' @'-A' ?5&F'&G' 641@21F' A'?' :2$2 1C' 2&F' 51E2&' 5$'5?' 2&F' -4' D51E'-' -A5' '&62&-1C' -4' -2H5' *D' '-?' M*21-51?' '&' -A5' :2D'-2 (' *&F51' ?-1':-' 41F51?' -4' 15?D5:-' -A5' D51?4&?' '2&F' D14D51-C' 46'-A5' :'-'L5&?

5' &4@' 4?-' &4' -'E5' '&' D15??'&G' -A5' ?'5G5' 46' -A5' 15&:A' 641-15??5?(' @A4?5' 'E D15G&2+ 5' ?'-*2-'4&' E 'GA-' A2$5' F51'F5F' -A5' 5664 1-?' 46' -A5' E4?-' 641E'F2+ 5' 5&5B E C' '&' -A5' 2&:'5&-' ?-2-5' 46' E' '-21C' ?:'5&:5' % +*-' -A5

I' 8 #&&#$ /# #' #$' + ' $- #' + ###' --'@@F @@4 A' -'4E(A 8#$ '2 '/# $L $ #!' $#' +'J#'' -' - #' #O'JJ#J' &$-'#' A =' (E A ? #&$' / ' 8 $' $-#=' $' 6# '/(-$" ' +'###' $ '&$-' JJJ# A $' :#$'/# -'F@E A + $ ' 6# '/# $ ':'* 23

15F*:-'4&' 46'-A5?5' D 2:5?' @2?' '&-1*?-5F' -4')-"5F14') ?6.'
$2114(' -A5' :5 5+12-5F' 5&G'&551(' @A4?5' 'E D14$5E 5&-?'
'&' -A5' 21-' 46'E '&'&G' A2$5' G2'&5F' A'E' -A5' D4D* 21' 15B
D*-2-'4&' 46'+5'&G' '-?' '&$5&-41(' 2&F' @A4' F'?D 2C5F'?*:A'
*&D15:5F5&-5F' ?H' ' 4&' -A'?' 4::2?'4&(' 2?' E 2H5?' '-' 2'
E 5E 412+ 5' 5D4:A' '&' -A5' 2&&2 ?' 46'@21 9' (
! &F51' A'?' F'15:-'4&?(' -A5'?E 2 ' -4@51' 46' - ' ':5&-5'
A2$'&G' +55&' 6'1?-' :211'5F' +C' 2' 6*1'4*?'.:2&&4&2F5(' 2'
E '&5' @2?' 1*&' *&F51' -A5' 4*-51' F565&:5?' 46' -A5(' G152-'
641-15??' :2 5F' 2?-5 ' *4$4 ' &' -A5' ;<?-' 46' 2C('
-A5' E '&5' @2?' ?D1*&G' 2' D2??2G5' @2?' 4D5&5F' 4$51'
-A5' D14?-12-5' 12E D21-?(' 2&F' -A5' 2??2' 2&-?(' 1*?A'&G' '&'
@'-A' 4&?2 $4' 2&F' 2$2' ' 2-' -A5'1' (A52F(' +56415' -A5
G211'?4&' A2F' -'E 5' -4' ?5:*15' -A5' F12@(' 2DD '5F' -A5'1'
2FF51?' -4' -A5' @2 ?' 46' -A5' :2?- F' 2&F' ?*::55F5F' '&'
:211C'&G' -A5' D 2:5' +C' 5?:2 2F5(' 26-51' 2' F5?D512-5'
?-1*GG 5(' '&' @A':A' -A5' G152-51' D21-' 46'-A5' 15&:A' @515'
? 2*GA-515F9' &' 'E E 5&?5' +44-C' @2?' 64*&F' '&' -A5'"
:2?- 5' A5' &G5$'&' D21-C' A2F' E2F5' '-' 2' D 2:5' 46'
F5D4?'-' 641' -A5'1' E4?-' $2 *2+ 5' 5665:-?(' G4 F(' ,5@5 ?'
D 2-5(' 2&F' 4-A51' -152?*15?(' @A':A(' -4G5-A51' @'-A' '-?'
@5 .?-415F' E2G2L'&5?' 46' G12'&' 2&F' 2E E *&'-'4&(' +5.1'
:2E 5' -A5' '&F'?:1'E '&2-5' ?D4' ' 46'-A5' $':-41?' ?' ?4E 5'
46' -A5?5(' A4@5$51(' :4ED 2'&5F' 46' &4-' G5--'&G' -A5'1'
?A215' M6' -A5' D *&F51(' 4&?2 $4(' G'$'&G' 6* ' ?:4D5' '&

1' ? ' $#$ ' # ' ? # '$/ +#L ' ?# ' " >' G$ ' &$ & >' '
$ # ' *' / ' $'$ ' &$ /' # & ' ? ' G$ ' ? '*# ' G? ' /# & L
+ /$ ' ' 0 ' &D' ' G?#&?' ' /' ? ' J #' ' $ /' * +#/L
? ' # ' # ' *' +# ' G$ ' $ L $0 ' ' ' G?#&?' ? >' +#"? ' 0 '
& #0 /' '?#+ ' $ # #'$- ' $+ ' $-- # /'# ' ? ' &# & ' *' / +&='
6# ' / ': # ' + '###' - '4@2 .' # ' ' ' '## ' - '22E' '
? "?' '$& $ >' ? '# ' L *' ?# ' 6# >

<==

-A5 5J* -2-'4& 46 -A5 E4E5&- -4 E ' '-21C ':5&?5(:2 5F 4*- G2' C(! 2H5 2E5&F? 641 '- -A5& +C @A2- C4*' :2& 6'&F '& E C M*21-51? PK A5 @41F? @515 &4- *--515F -4 F526 521?' A5 E4+ 46?4 F'51C 1*?A5F -4 -A5 ?D 5&F'F D2 2:5 46 -A5 &G5$'& 1'&:5 46 2 51&4(-A5& 4::*D'5F +C -A5 152- 2D-2'&(2&F '& 2 E4B E5&- '-? ?*ED-*4*? 6*1&'-*15(D2'&-'&G?(2&F 4-A51 :4?- C F5:412-'4&?(-4G5-A51 @'-A -A5 :4&-5&-? 46 '-? G5&514*? :5 21(@515 ?5'L5F 2&F 2DD14D1'2-5F @'-AB 4*- :515E4&C +C -A5 '&$2F51?(@A4 -A*? '&F5E&'6'5F -A5E?5 $5? 2- -A5'1 G5&512 0? 5JD5&?5 641 -A5 15E'??B &5?? 46 G4$51&E5&-

6-51 ?4E5 @55H? 46 D14-12:-5F 4D512-'4&?(-A5 15B E2'&'&G 641-15??(2?-5 F0 $4(2? '- @2? :2 5F(4D5&B 5F '-? G2-5? -4 2$2114N 2&F 2 15&:A 6 55-(:4E'&G '&-4 -A5 A21+4*1(A2F -A5 E41-'6':2-'4& -4 6'&F '-?5 6 6'15F 4& 614E -A5 @2 ? 46 -A5 D 2:5 '- @2? '&-5&F5F -4 15 '5$5 5641 5-A'? 5$5&-(4&?2 $4(A2$'&G 4+B -2'&5F 6*&F? 6'04E D2'& 641 D2C'&G 466 A'? E5&(M*'-B -5F -A5 :2D'-2 2&F F'15:-5F A'? E21:A 4& 25-2. A5 'ED41-2&- 15?* -? 46 A'? $':-41'5? @515 &4@ 6* C F'?B :4?5F 0 *+'G&C(@'-A -A5 @15:H 46 -A5 641:5? 5?:2D5F 664E 5E'&212(A2F ?*115&F515F A5 -@4 +1*LL'U. -A5 2D'-2&2-5(2 -A5 2?' ':2-5(5J:5D- 5&4?2 ?-' A5 F +C 4*'? F0 1?(2&F '&F55F 5$51C :4&?'F512+ 5 D 2:5 '& -A5 H'&GF4E(A2F -5&F515F '-? ?*+E'??'4&(@'-A -A5 5J:5D-'4& 46 25-2 *EE4&B '&G - ,5156415 -4 A'? 2'F &F12F2(2$2114(2&F A'? 4-A51 46 ':51?(-A5 152- 2D-2'& 15?4 $5F -4 :4&:5&B -12-5 2 A'? ?-15&G-A 4& -A'? D4'&-(F5?'G&'&G -4 D15??

-A5 ?'5G5(2&F -A*? 5J-51E'&2-5 2- 2 + 4@ -A5 655+ 5 15E2'&? 46 -A5 15&:A D4@51 '& -2 C A5 5&-51 D1'?5 @2? 2--5&F5F @'-A E415 F'66':*-C -A2& A5 A2F 2&-':'D2-5F 9

I M #$ 6# / 6 $ / + # # #0 : &$- JJJ JJJ# JJJ#' HHH: A P '## :# 222 :# * F@@AF@ A 8$ #0$> + - / 6# + ## #0 J#J &$- H: A $/ $ $&# &$- & JJJ### A 8 #&&#$ /# # /($ #0 '# -- 4E) A 4E5

> ! !42(214 64 (<S(< dd + +# $ # # + ### - F)2 A + + 6# /# $- # + ### - @@(A ? #&$ / 8 $-# $ &$- JJJ# JJJ'# JJJ'## J&### J&' A # + /# 6# / $ = $# + J' --(E) A (E5

<=

' Z

8 ' 7 6' ' A ' ' : L

' ' ⟨A

<

$ ' 5$5&-?' &4-': 5F' '&' -A5' D15: 5F'&G' : A2D-51' G 'FB 5F' 2@2C' 2?' 12D'F C' 2?' -A5' 6 '--'&G' DA2&-4E?' 46' 2' F152E ' :21:5 C' A2F' 4*'?' Z ' 15:5'$5F' -A5' *&B @5 :4E5' '&-5 'G5&:5' 46' 4&?2 $4' F5'⟨ 41F4$2⟨?' 15B 6*?2 ' -4' 4+5C' -A5' E2&F2-5' 46' -A5' 1:AF*H5' A' 'D(' 515' A5' @2?' 2?-4*&F5F' @'-A' -A5' -'F'&G?' 46' -A5' $': -41C' 46' 51'G&4 2(' -A5' E21:A' 4&' 2D 5?(' 2&F' -A5' ?*115&F51' 46' -A2-' :2D'-2 ' 2?' @5 ' 2?' 46' -A5' G152-51' D21-' 46' -A5' H'&GF4E(' 64 4@'&G' 4&5' 2&4-A51' '&' +152-A 5??' ?*::5?B ?'4&' -' ?55E5F' 2?' '6' -A5' $51C' E52&?(' 4&' @A': A' -A5' 15&:A' H'&G' A2F' ?4' :4&6'F5&- C' 15 '5F' 641' :2 E'&G' -A5' -5'&D5?-(' A2F' +55&' -+5' ?'G&2 ' 641' 2@2H5&'&G' 2 ' '-?' 6*1C(' 2&F' +1'&G'&G' '-' 4&' A'?' F5$4-5F' A52F ' 41-'6'5F' 2&F' '&:5&?5F.2-' +5'&G' E2F5' -A5' F*D5' 46' @A2-' A5' F55E5F' 2' D516'F'4*?' D4 ':C(' A5' F5E2&F5F' 2&' 5JD 2B &2-'4&' 46' -A5' 21:AF*H5(' @A4' @2?' ?-' ' '&' 12&:5 ' A5' 2--51(' $5A5E5&- C' D14-5?-'&G' A'?' 4@&' '&&4:5&:5(' 65 -(' 41' 2665:-5F' -4' 655 (' ?4' ?5&?'+ C' -A5' 1'F': * 4*?(' 2&F(' 2?' '-' 2DD5215F(' F'?A4&4*12+ 5' D21-' D 2C5F' +C' A'E' '&

-A5 -12&?2:-'4&(-A2- A5 @2? -A14@& '&U4 2 ?5$515
' &5??(@A':A :4&6'&5F A'E -4 A'? +5F 641 ?5$512
F2C '9 U '-A4*- F5 2C(A5 @14-5 -4 -A5 D2'1'?A
:4*1- '& -51E? 46 +'--51 5JD4?-* 2-'4&(*1G'&G -A5
'E E5F'2-5 12-'6':2-'4& 46 -A5 -152-C E2F5 D*1?*2&-
-4 '-? 41F51?(2&F 2& '&F5E&'6':2-'4& -4 1A&:5 641
'-? ?*+?5M*5&- $'4 2-'4& *:A '? -A5 2::4*&-G'$5&
+C -A5 15&:A A'?-41'2&?

A5 D2&'?A @1'-51?(4& -A5 4-A51 A2&F(?2C -A2-
+56415 -A5 &5@? 46 4&?2 $40? ?*::5??5? 152:A5F
D2'&(T'&G 51F'&2&F 156*?5F -4 :4&6'1E -A5'-152-C
?5&- A'E +C A'? ?4&.'&. 2@(*&-' '- A2F0 *&F51G4&5
:51-2'& E2-51'2 E4F'6':2-'4&? 6 -A5 D2&'?A E4&B
21:A A5?'-2-5F -4 2DD14$5 -A5 -152-C '& -A5 F4*+-6*
D4?-*15 46 A'? 2662'1?(A5 @2? '-- 5 'H5 C -4 F4 ?4 @A5&
A5 A2F -A5 G2E5 5&-'15 C '& A'? 4@& A2&F? 6

5 D4?-D4&5F 2& 2&?@51 -4 A' 'D0? 2DD ':2-'4&
641 ?4E5 -'E5(@' '&G D14+2+ C -4 G2'& -'E5 641 -A5
152- 2D-2'& -4 ?-15&G-A5& A'E?5 6 6'1E C '& A'?
15:5&- 2:M*'?'-'4&? - 5&G-A(26-51 2 :4&?'F512+ 5
'&-51$2 (A5 F5?D2-:A5F 2& 5E+2??C -4 12&:5(2&B
&4*&:'&G A'? 6'&2 F5-51E'&2-'4& &5$51 -4 12-'6C 2
-152-C E2F5 '& :4&-5ED- 46 A'? 41F51?(2&F ?4 : 521 C
F5-1'E5&-2 -4 A'? '&-515?-? 5 5&F52$4*15F(A4@.

I 8 $# + G# # " 8$+# 6# / $ & 0 + ' '
$&& - ?#-0 $ + $ / - (2E A 8$# $M #'$# / '
& #/ ? G? $**$# * ? $ & / 0 -$" + '#' --
" #$# $ U * /#= F43 F45 A 9 # $ $ / '
1 $ /0 / #&D R ! $ &# $" + ' ' #0 ' ' &$- JJ###
&$ / & >, # M$' # A 8$ #0$> 6# / -$ $'
0# *$# /0$ R 6# / + '## #0 J#J &$- J' A =
H - 2)F $ 6# /0 -$" + ' '###
8 $# 0# - $ A - F34

<=S

5$51(' -4' G2'&' 6*1-A51' -'E5' +C' ?D'&&'&G' 4*-' -A5' &5G4B -'2-'4&(' A4 F'&G' *D' 641' -A'?' D*1D4?5' -A5' D14?D5:-' 46' 2&' * -'E2-5' 2::4E E4F2-'4&(' 2&F' ?*GG5?-'&G' -A5' 155?B -2+ '?AE5&-' 46' A'?' H'&?E2&(' -A5' .*&641-*&2-5' 15F5B 1':(' 4&' -A5' 52D4 '-2&' -A14&5(' 2?' -A5' +5?-' E52&?' 46' 5665:-'&G' '-' A5' 21-'6':5(' A4@5$51(' @2?' -44' G14??' 5$5&' 641' -A5' :15F* 4*?' 4*'?N' @A4' D515ED-41' C' F5B E2&F5F' 46' -A5' 2E+2??2F41?(' -A5' '&?-2&-' 2&F' 2+?4 *-5' 12-'6':2-'4&' 46' -A5' -152-C(' 2&F(' 4&' -A5'1' F5: 21'&G' '-' @2?' +5C4&F' -A5'1' D4@51?(' 41F515F' -A5E' 2-' 4&:5' -4' 52$5' A'?' :4*1-' R' ' A2F' 12-A51(K' ?2'F' A5(' R' ?*6651' -A5' 4??' 46' 2' H'&GF4E(' @A':A' E2C' D51A2D?' +5' 15B -1'5$5F(' -A2&' -A5' 4??' 46' A4&4*1(' @A':A' &5$51' :2&K' ' &4+ 5' ?5&-'E5&-(' +*-' 62 '&G' @'-A' &4' D21-':* 21' G12:5'614E' -A5' 'D?' 46' 4*'?' Z 9

A5' @A4 5' 46' -A'?' + '&F' -12&?2:-'4&' '?' ?-2-5F' '&' ?4' '115:4&:' 2+ 5' 2' E2&&51' +C' -A5' A'?-4'0'2&?' 46' -A5' F'6B 6515&-' &2-'4&?(' -A2-' '-' '?' 5J-15E5 C' F'66':* -' -4' F12@' 2&C' -A'&G' 'H5' 2' D14+2+ 5' &2112-'$5' 4*-' 46'-A5E' A5' D2&'?A' @1'-51?' 2??51-' -A2-' -A5' D*+ ':' :4EE'??'4&' 46' -A5' 21:AF*H5' @2?' :4&-14 5F' +C' ?-1':-' D1'$2-5' '&B ?-1*:-'4&?'N6' @A' 5' -A5' 15&:A(' 4&' -A5' 4-A51' A2&F

I' 8$+# ' 6# ' / ' $ & ' +' :' -'433 A 0$ &$' > ' / ' $" ' +' ##' ' JJJ' &$-'J# ' &'### A 8 #&&#$ /# #' 2 ' /0 $' +'#' -'4EE< /' 2B(@'A'9 # $' $ ' +''' #0' :' &$-'#J

-'?2E*?'&G-4'?55@'-A'@A2-' '&F*?-1C':51-2'& 15&:A'@1'-51?(2? 2' 21F' 2&F' 21' 2?(215D51B D5-*2 C':4&-12?-'&G -A5 ' '46' 4*'?Z ' @'-A' -A5

'46' 51F'&2&F(@A4?5?5B :15-' '&-5&-'4&?(5$5&(215M*4-5F' '& 5$'F5&:5 46' A'? ACD4:1'?C(@A'5-A5'E4?-4+,5:-'4&2+52:-? 46'A'?1'$2' ?55E'-4+52+*&F2&-B C':4ED5&?2-5F'+C'?4E56'&5?5&B -'E5&-' 'H5-A2-' '& -A5 -5J-

X'9 # $' 6# ' +' #' #0' ' ' &$-'H A 0$ &$' > '/' $" ' +'##' 'JJJ' &$-'J###' &'##' A $ #$ $' 6# '/' -' +'##' --'B5E'B52 A '$

215 5'-A51 ?' 5&- 2? -4 -A5 2--51(41 15D15?5&- -A5 E -4 A2$5 +55& 2? +142F 2&F *& 'E'-5F 2? A'? :15F5&B -'2 ? 9 6 -A'? +5 -1*5(-A5 &5G4-'2-'4&? E *?- +5 2FB E '--5F -4 5JA'+'- 4& -A5 D21- 46 51F'&2&F 2? G14?? 2& 5J2 E D 5 46 D4 '-':2 ,*GG 51C 2&F 62 ?5A44F 2? 5$51 F'?G12:5F -A5 2&&2 ? 46 F'D 4 E 2:C 6

- '- '? 2 -4G5-A51 'E D14+2+ 5(2? A2$5 +56415 15 E 21H5F(-A2- 2 E 4&21:A ?4 2?--5 2&F A2+'-*2 C :2*-'4*? ?A4* F A2$5 '&-1*?-5F *& 'E'-5F 2*-A41'-C('& ?4 F5 ':2-5 2 +*?'&5??(-4 2 D51?4& @A4?5 F'?:15B -'4&('&F5D5&F5&- 46 A'? H&4@& D21-'2 '-C 641 -A5 15&:A E 4&21:A(A4 A5 F ?4 'GA- C - '? E *:A E 415 'H5 C -A2- A5 'E'-5F(2? '? 46-5& F4&5(-A5 6* D4@51? :4 E E'--5F -4 A'E '& D*+ ':(+C D1'$2-5 '&B ?-1*:-'4&? 46 -A5 E 4?- 5JD ':'- :A212:-51 2&F -A2- -A5 21:AF*H5 @2? +5-12C5F +C A'? 4@& $2&'-C(2&F D51A2D? 2E+'-'4&(/641 -A5 -152-C -A15@ -A5 'E E 5F'.

2*F5 5C??5('?-(F5 4*'? Z D B2 A - 5 2'?('?- F(5 4*'? Z D < < > 2' '21F('$2 (F5 1 5- F ?. D2G&5(-4E '$ D ; > 2E'51('?-(F5 12&:5(-4E $ D S >) F *-4&('?-(F5 4*'?Z '':A JJJ''

- 21' 2? 15G21F? A' 'D? E'??'4& -4 12&:5 2? 2 -A5 D21- 46 51F'&2&F(@A4 -A515+C 1'F A'E?5 6 46 2 F2&G514*? 1'$2 2- A4E5('H5 C -4 :4&-5?- A'? ?*::5??'4& -4 2?B -'5 4& ?2+5 2? F52-A(@A'5 A5 5ED 4C5F -A2- 1'$2 '& 4*-B @'--'&G 4*'? Z +C 2 -152-C U$A':A A5 E52&- -4 F'?2$4@

#, / / # $ / #' # -- 2(B A 2@E . ? *# * ? #+- $ # # **#&# /# - / 0 ? *$& ?$?# #- , # / -$# # -- # # ? - # + $ & * ? D# , $ /& $ / ? " $ /# " * ? G? $ # $ - $ / $ / 0 8 + K $ > $ / ? & L +- $ # ? & / G# 0 /#**#& * $ / # ?$ / - $ # $ +$ & # # D G ? ?#+ * &? $? *#+ ? & 0G 0 * G?#&? ?# - # #&$ / $+ ? # $ +$/ ?

<
2-5 D4@51 '&-4)''? 4@& A2&F?(7 '&-4 2112&G5E5&-? *&@2112&-5F +C -A5 -5&41 46 -A5?5 '&?-1*:-'4&? 9

6 -A'? @515 -A5 :2?5(-A5 D14D1'5-C 46 51F'&2&F0? :4&F*:- '& 156*?'&G -A5 12-'6':2-'4&(F5D5&F? 4& -A5 M*5?-'4& A4@ 621 2 ?4$515'G& '? +4*&F +C -A5 2:-? 46 2 D 5&'D4-5&-'21C @A4 F5D21-? 614E A'? D1'$2-5 '&B ?-1*:-'4&? 41E51 C(-A5 M*5?-'4& @4* F ?55E -4 A2$5 +55& *&?5-- 5F &F55F(?4E5 46 -A5 E4?- 15B ?D5:-2+ 5 @1'-51? 4& D*+ ':2@ '& -A5 +5G'&&'&G 46 -A5 ?5$5&-55&-A :5&-*1C E2'&-2'&(-A2- ?*:A 2 F5B D21-*15 @4* F &4- ,*?-'6C -A5 D1'&:5 '& @'-AA4 F'&G A'? 12-'6':2-'4&N F5:'F'&G-A*?(&4 F4*+-(4& D1'&:'B D 5? 46 &2-*12 5M*'-C(@A':A 2DD521 -4 15M*'15 -A2- 2 D1'&:'D2 ?A4* F +5 A5 F 15?D4&?'+ 5 641 -A5 2:-? 46 2& 2G5&-(:4E'&G @'-A'& -A5 ?:4D5 46 A'? D4@51?(-A4*GA 2- $21'2&:5 @'-A A'? ?5:15- 41F51?(@'-A @A':A -A5 4-A51 :4&-12:-'&G D21-C :2& A2$5 &4 2:M*2'&-2&:5 41 :4&:51&(6

I $ > G? '& -# '& L
- / &'* # ? ' ? ' + '
'$ $0 ' & + + $ > , L
$0 > ' ? ' - & /# " ' *
?# ' #" '#' - ' D# " > 'L
/'# ' "$ /' ' ?# ' # # "
+$ ' 6 ' & ' ?#+ *
G# ?' +$ D# "'# ' ' *'?# ' L
' ?$ 'U' ? ' -$ #$ / '/ #/ /'
?# #-(' " #$ # '$ ' *' '& L
, & '$ /'# / /'$ " ? '
- - '& #/ # "' ? '$ L
/ '$ + /'0> ' ? ' $ # '$'
?$ ' ' > #+ ' * ' +$# $# # "
' & $#+ ' 0> ' ? ' G /$ /'
? '/# +# ' ? ' 0! & 'G# ?' $
* & # ' ?$ ' + ' ' ' ? '
+ # ' *' ? '&$ ' + ' ' +#"?
?$ ' #"? ' R' J# ' , #! / J'
' +' + ' , $ <
#' " ' - # ' +$! #
J'-$ V' -# '&& '## .' ?# '
' ' *' $ > ' +#"? '0 '& L
/' *$' $0 >' * ' /#L
$ /'G ' # ' ' * ' ? ' * L
/ +' G# ?' G?#&?' ? ' $ >' & #L
#&# ' G?$ ' ' $-- $ ' $ >'
0! & # $0 ' ' ?#+'# ' ? ' + $L
' *' ? '" ' +

' 8 # ' ' P ' ' '
$&' #0'##'&$-'J#' &'J## .' #0'
###'&$-)JJ##' &'#' A 8 ##'
'P ' #' #0'###' &$-'J#''
$-' > D ? D' ; $ ' P '
0' #0'##' &$-''##

A5 '&:4&$5&'5&:5(A4@5$51(21'?'&G 614E 2F4D-B '&G 2 D1'&:'D 5 '& D4 '-':2 &5G4-'2-'4&?(@A':A E*?- &5:5??21' C D 2:5 -A5 F5?-'&'5? 46 2 @A4 5 &2-'4& '& -A5 A2&F? 46 2 ?'&G 5 '&F'$'F*2 (12?A 41 '&:4ED5-5&-('- E 2C +5(@'-A4*- -A5 D4@51 46 '&-516515&:5 41 ?*B D51$'?'4& 4& -A5 D21- 46 -A5 G4$51&E5&-(A2? 5F -4 2 F'66515&- :4&: *?'4& '& D12:-':5N 2&F '- '? &4@ G5&5B 12 C 2FE'--5F +C *14D52& @1'-51?(&4- E515 C -A2- -A5 5J:A2&G5 46 12-'6':2-'4&? '? 5??5&-'2 -4 -A5 $2 'B F'-C 46 2 -152-C(+*- -A2- 2 G4$51&E5&- '? &4- +4*&F -4 12-'6C -A5 F4'&G? 46 2 E'&'?-51 @A4 A2? -12&?:5&FB 5F A'? D1'$2-5 '&?-1*:-'4&? 9

*- @A2-5$51. +5 -A4*GA- 46 51F'&2&F0? G44F 62'-A '& -A5 521 C ?-2G5? 46 -A'? +*?'&5??(-A515 '? &4 F4*+- -A2-(2- 2 2-51 D51'4F(@A5& A'? D4?'-'4& @2? :A2&G5F +C -A5 ?*::5?? 46 A'? 21E? '& -2 C(A5 ?4*GA- 4& C -4 2E*?5 -A5 15&:A :4*1- @'-A 2 ?A4@ 46 &5G4-'2-'4&('& 41F51(2? @5 A2$5 2 152FC '&-'B E2-5F(-4 D212 CL5 '-? 4D512-'4&? 2&F G2'& -'E5 641 ?5:*1'&G A'? :4&M*5?-? A5 15&:A @1'-51? '&$5'GA 4*F C 2G2'&?- -A'? :126-C 2&F -152:A514*? D4 ':CN 2&F 4*'? Z G2$5 $5&- -4 A'? 4@& '&F'G&2-'4& '& &4 $51C E52?*15F -51E? *-(A4@5$51 @5 E2C &4@ 15G21F '-('- @2? '& D5165:- 2::41F2&:5 @'-A -A5 -1':H'?A ?D'1'- 46 -A5 2G5N 2&F -A5 15&:A H'&G 15.

9 C&H51?A45H(b*?5?-)*1'? *+ '+ ''' :2D $''.... 2+ C(14'- *+'M*5(:A2D(' > 2--5 (14'- F5? 5&?('$ ''' :A J'' > [21-5&?(2@ 46 2-'4&?(-12&? +44H ''' :A2D''

C&H51?A45H(-A5 521 '5?- 46 -A5?5 @1'-51?(A2? F'?:*??5F -A5 M*5?-'4& @'-A 2& 2ED '-*F5(D51B ?D':*'-C(2&F 62'1&5?? *&?*1D2??B 5F +C 2&C @A4 A2$5 64 4@5F A'E

< ; 8 ' 7 6' <

?'G&5F' 2 ' 1'GA-'(46' 15+*H'&G' A'?' 2&-2G4&'?-' 4&' -A'?'
?:415(' @A5&' A5' :4&F5?:5&F5F' -4' +5:4E5' 2' D21-C' @'-A'
A'E' -4' -A5' '&62E4*?' D21-'-'4&' -152-C(' 2&F' ?-' ' E415'
@A5&' A5' ?4' G14?? C' $'4 2-5F' '-' 5' A2F' $4 *&-21' C('
5&G2G5F' @'-A' A'?' D2&'?A' 1'$2 ' '&' -A5' G2E5(' 2&F' '-'
2661F5F' &4' G44F' G14*&F' 46' :4ED 2'&-' -A2-' A5' @2?'
-A5' 52?-' 2F14'-' 46' -A5' -@4

A' 5' 51F'&2&F' @2?' -A*?' -1'*EDA2&-' '&' A'?'
?:A5E5?' 46' 6415'G&' D4 ':C' 2&F' :4&M*5?-(' A'?' F4E5?-':'
'65' @2?' : 4*F5F' @'-A' -A5' F55D5?-' 2&J'5-C(' '&' :4&?5B
M*5&:5' 46' -A5' F5: '&'&G' A52 -A' 46' -A5' M*55&(' 2&F' -A5'
5::5&-1':' :4&F*:-' 46' A'?' F2*GA-51(' -A5' &62&-2')42&B
&2 ' 5' A2$5' 2 152FC' @'-&5??5F' -A5' 5J-12$2G2&-'
64&F&5??' @'-A' @A':A' -A2-' D1'&:5??(' &4-@'-A?-2&F'&G('
A51' 4::2?'4&2 ' ?2 '5?' 46',52 4*?C(' F4-5F' 4&' A51(C4*&G'
2&F' A2&F?4E5' A*?+2&F 9' 14E' -A5' A4*1' 46' A'?' F5B
D21-*15' ?A5' A2F' +55&' D *&G5F' '&' -A5' F55D5?-' F5,5:B
-'4&(' ?'--'&G' F2C' 2&F' &'GA-' @'-A' A51' 5C5?' 6'J5F' 4&' -A5'
G14*&F(' '&' *&'&-511*D-5F' ?' 5&:5(' 41' +14H5&' 4& C' +C'
4::2?'4&2 ' 5JD15??'4&?' 46' D5-* 2&-' F'?:4&-5&-' A5'
156*?5F' 2 ' :4&?4 2-'4&(' -A'&H'&G' 4& C' 46'15,4'&'&G' A51'
2+?5&-' 41F(' R' 5M*2 C' 15G21F 5??(K' ?2C?' 21-C1(' @A4'
@2?' -A5&' 2-' -A5' :4*1-(' R' 46' A51?5 6(' A51' 6*-*15' ?*+B
,5:-?(' 41' A51' 266 ':-5F' D215&-? K"P"

&' -A5') -A' 46' 21:A' < (' ?A5' @2?' F5 '$515F' 46'
A51' ?5:4&F' ?4&(' @A4' 15:5'$5F' -A5' +2D-'?E2 ' &2E5' 46

I' ?#-'#'D G'#' '?# >' ' - ' -# $ ' -' && ###'
0>' ?' # ' *' ?' 6$ / + ' A' $ ' 6# ' /(-$" '
#+ - ># "' ?$' ?' G$ ' $' $ ' +' '###' --' F4@' F43 A ' '
, # '$' +$ D$0 '* ' ?#' - = 8 + &# ' ' 0'8 'H#+ '
$', $## '$'?#' + $' * ' !"

51F'&2&F('&: 4ED 'E5&-4A'? G12&F62-A51 9 4 :A2&G5(A4@5$51(-44H D 2:5 '& -A5 E '&U 46-A5 *&B 641-*&2-5 E4-A51(@A4 614E -A'? -'E5 @2? @A4 C 4::*D'5F @'-A -A5 D14,5:-4 6 15-*1&'&G -4 2&F51? &''&$'-2-'4&-4 -A2-5665:-(@A':A ?A5 15:5'$5F 614E A51 A*?+2&F'& -A5 E4&-A 46 4$5E+51(F5-51E'&5F A51 -4 *&F51-2H5 -A5 ,4*1&5C 2-2 A2L21F?(&4-B @'-A?-2&F'&G -A5 2665:-'4&2-5 15E4&?-12&:5? 46 -A5 M*55&(@A4 15D15?5&-5F -A5 'ED12:-':2+' '-C 46 -12B $51?'&G 12&:5(2G'-2-5F(2? '- -A5& @2?(@'-A 2 -A5 +*?- 5 46 @21 'H5 D15D212-'4&(41 46 $5&-*1'&G +C ?52 2- -A'? '&: 5E5&- 2&F ?-41EC ?52?4&

&5 5$5&'&G(@A' 5 A51 E4-A51 @2? 2+?5&- 2- 5B G4$'2( )42&&2(@A4?5 15?'F5&:5 @2? 2- 5F'&2 F5 2ED4(56- A51 2D21-E5&- '& -A5 :2?-5(2&F ?2 '5F 4*-(-A4*GA '& F'?A2+' 5(@'-A4*- 2&&4*&:'&G A51 D*1D4?5 -4 2&C 46 A51 2--5&F2&-? A5C 64 4@5F(A4@5$51(2&F *?5F 5$51C 21G*E5&- 2&F 5&-152-C -4" D15$2' 4& A51 -4 15-*1&(2- 52?- 641 -A5 &'GA-(+*- @'-A4*- 5665:-N *&-' -A5 '?A4D 46 *1G4?(@A4 A2F :A21G5 46 A51 A4*?5A4 F(&F'&G 5$51C 4-A51 E52&? '&5665:-*2 (@2? :4ED5 5F -4 : 4?5 -A5 :2?- 5 G2-5? '& 41F51 -4 D15$5&- A51 F5D21-*15

I $ 0$!$ $ P $ 2@E4 A 8 + &# 0 8 # H#+ ##* (@ (B 6 G$ 0 +$ &$ $/ 6 $ H#+ $'$# /?#+ * ?# &# & + $ & 0 $# * + $0 $ $ - +$ JL +-# * + $J * ?# *$L ' # &# >G?#&? ?# - # & -$ $" G$ *$ $# # " -

& ?-$ +* # $ >- L & / & G# ? $$+$ &$? $ L &# $? * -$# C ? &# #K * *? - $& " - 'L /$ / # - ' * $ "? 2 D G ? & $/ * ? >$ # L *$ # D * ? # " $ # / 0 :#/$ / H#+ -

A5' D1'&:5??(' -A*?' -A@21-5F' '&' A51' D*1D4?5(' G2$5' @2C' -4' -A5' ,&4?-' $'4 5&-' '&F'G&2-'4&' A5' E5&2:5F' -A5' 2--5&F2&-?' @'-A' A51' *-E4?-' $5&G52&:5' 641' -A5'1' F'?4+5F'5&:5(' 2&F(' -2H'&G' A51' ?-2-'4&' 4&' -A5' +211'51(' ?A5' 4+?-'&2-5 C' 156*?5F' -4' 155&-51' -A5' :2?- 5(' 41' 5$5&' -4' D*-' 4&' 2&C' 2FF'-'4&2' :4$51'&G(' +*-' 15E2'&5F':4 F' 2&F' ?A'$51'&G' 4&' -A5' ?D4-' -' ' -A5' 64 4@'&G' E41&'&G' A5' G44F' +'?A4D(' ?415 C' 5E+2112??5F' +C' -A5' F' 5EB E2' -2' @A':A' A5' 64*&F' A'E?5 6' 15F*:5F(' 46' 4665&F'&G' -A5' M*55&' +C' :4ED C'&G'@'-A' -A5' E2F' A*E4*1' 46'-A5' D''&:5??(' 41' -A5' 2--51' ?-' ' E415' +C' 15?'?-'&G' '-(' F5?B D2-:A5F' 2&' 5JD15??' '&' 2 ' A2?-5' -4' ?2+5 2(' 2:M*2'&-B '&G' A51' @'-A' -A5' 2662'1(' 2&F' +5GG'&G' '&?-1*:-'4&?' A4@' -4' D14:55F

A5' M*55&(' @A4' @2?' ?-27F&G(' 2?' A2?' +55&' ?2'F(' 2-' 5G4$'2(' 2+4*-' 641-C' E' 5?' F'?-2&-(' 2 21E5F' 2-' -A5' '&-5 'G5&:5(' ?5&-' -A5(' H'&G0?' :4*?'&(' -A5' FE'12' 5&1'M*5L(' -4G5-A51' @'-A' -A5' 1:A+'?A4D' 46' 4 5F4(' 2-' 4&:5' -4' 5F'&2(' 2&F' D15D215F" -4' 64 4@' 2?' 62?-' 2?' -A5' 655+ 5' ?-2-5' 46' A51' A52 -A' @4* F' D51E'-' A5' 56641-?' 46' -A5?5' 5E'&5&-' D51?4&?(' A4@5$51(' @515' &4-' E*:A' E415' ?*::5??6*' -A2&' -A4?5' 46' -A5' +'?A4D' ' -A5C' :4* F' 4+-2'&' 614E')42&&2' @2?(' -A2-' ?A5' @4* F' 15-'15' -4' 2' E'?512+ 5' H'-:A5&' '&' -A5' &5'GA+4*1A44F(' F*1'&G' -A5' &'GA-M' @A' 5' ?A5' D51?'?-5F' '&' -2H'&G' A51' ?-2-'4&' 4&' -A5' +211'51' 2?' ?44&' 2?' '-' @2?' 'GA-(' 2&F' :4&-'&*5F' -A515(' 'EE4$2+ 5' 2?' 2' ?-2-*5(' -A5' @A4 5' F2C' &' -A'?' F5D 412+ 5' ?-2-5' ?A5' @2?' 64*&F' +C' -A5' M*55&' 4&' A51' 211'$2M 2&F' '-' @2?' &4-' @'-A4*-' G'052-' F'66':*-C' -A2-' -A5' 2--51(' @'-A' 2' -A5' F56515&:5

'2+'-*2 C D2'F A51 +C A51 F2*GA-51(?*::55F5F '& D51?*2F'&G A51 -4 15-*1& -4 A51 4@& 2D21-E5&-?'& -A5 :2?-5 A5?5 @515 -A5 6'1?- *&5M*'$4:2 ?CEB D-4E?4 6-A2- A515F'-21C -2'&- 4 6'&?2&'-C @A':A A2F : 4*F5F -A5 2--51 F2C? 4 6 ?2+5 2 0? E4-A51(2&F @A':A(@'-A 2 65@ +1'56 '&-51$2 ?(@2? -4(?A5F 2 F55D51 G 44E 4$51 -A5 4&G D14-12:-5F 5J'?-5&:5 4 6 A51 *&641-*&2-5 F2*GA-51 9

A5 :4&$':-'4& 4 6 -A'? ?2F '&6'1E'-C 4 6 -A5 D1'&B :5?? G2$5 2 ?A4:H -4 -A5 *&A2DDC E4-A51(?:21:5 C 5?? -A2& -A2- @A':A ?A5 A2F 641E51 C +55& :2 5F 4& -4 5&F*15 '& -A5 F52-A 4 6 A51 :A' F15& A5 ?4114@? 4$51 @A':A -'E5 A2F A2F ?4 '-- 5 D4@51(@515 4D5&5F 2615?A +C 2 :2 2E'-C @A':A &2-*12 C 6' 5F A51 @'-A -A5 E4?- G 44E C 6415+4F'&G? 641 -A5 62-5 4 6 A51 D54D 5(@A4?5 @5 6215 @2? -4 +5 :4E. 'E'--5F -4 ?*:A '&:4ED5-5&- AU&F? A5?5 F4E5?-':' G1'56? @515 ?-' 6*1-A51 ?@5 5F 2- -A'? -'E5 * -A5 F52-A 4 6 -@4 4 6 A51 2&:'5&- 61'5&F? 2&F :4*&?5 41?( )*2& A2:4&(F5 2&-2F4 4 6 *1:'2(6 2&F *-'5115 F5 21F5&2?(12&F 4EE2&F51 4 6 54& X A5C A2F

I $ > - -# > $ G# ? #+- $ # ? #+ J'### A 9 # $ 6# / 6 + + #0 ' &$- '# A '$ 8 # &# 0 8 H#+ ## * 0 (B XU - ! / 0 /$/ V A +# L *'# A $ '# / > ?# &$'$# 6 G$ $ G$> + &? "$ / /0> ? ' #" < $ / ? & $ #' - * & G?#&? ? '* /'* + $ > > $ $0 /'?#+ '$&, # '$ #+ + $ @E EEE / &$ '$? >' ; # & $" $ $ 2 , # & F /#$ F ? ? '$+ *' ?# '&$'$# $ G ' $?$ *' ?# '& # / ' $ / $ 8 $ /' $ L ' *' P$+ '?$' '0 & + '*$L +# #$ ' # ' ? ' 8 $ $/# G$ ' *' 8 # 0 ' +$/ ' $ 0 # #$ '*#" ?$ ' ? ' $ I ? '$&, # /'0> + $ *'?# # #+$&> G# ? ? ' #" $ /' ?# ' - #= $' , $# # $

2--2:A5F' -A5E?5 $5?' -4' ?2+5 2' '&' -A5' 521 C' D21-' 46' A51' '65(' @A5&' A51' 641-*&5?' @515' ?-'!' *&F51' 2' : 4*F' N 2&F' -A5C' 26-51@21F?' 152D5F' -A5' 15M*'-2 ' 46' -A5'1' ?51B $':5?' '&' ?*:A' 2ED 5' A4&4*17' 2&F' 5E4 *E5&-?' 2?' 14C2 ' G12-'-*F5' :4* F' +5?-4@(' 2&F' '&' -A5' 6* ' 5&,4CE5&-' 46' A51' :4&6'F5&:5(' -4' @A':A' -A5'1' ?-52FC' F5$4-'4&' -4' A51' '&-515?-?' @5 ' 5&-'- 5F' -A5E ' 9

-' &5'-A51' -A5' F4E5?-':' -14+ 5?' @A':A' D15??5F' ?4' A52$' C' 4&' ?2+5 20?' A521-(' &41' -A5' 12D'F C' F5: '&'&G' ?-2-5' 46' A51' 4@&' A52 -A(' A2F' D4@51' -4' + *&-' -A5' 5&51B G'5?' 46' A51' E'&F(' 41' 5??5&' -A5' $'G' 2&:5' @'-A' @A':A' ?A5' @2-:A5F' 4$51' -A5' '&-515?-?' 46' A51' D54D 5' ' 15B E21H2+ 5' D1446' 46' -A'?' @2?' G'$5&' '&' -A5' 2*-*E&' 46' -A5' D15?5&-' C521(' < (' @A5&' -A5' :4*&-1C' ' E5B &2:5F' @'-A' 2&' '&$2?'4&' 614E' 12&:5

A5' @A4 5' 15&:A' &2-'4&' A2F' ?A215F' -A5' '&F'G&2B -'4&' 46' 4*'?' Z ' 2-' -A5' E41-'6C'&G' 15?* -' 46' A'?' 5&-51D1'?5' 2G2'&?-' 2D 5?' N 2&F' '-' 2&?@515F' A'?' :2 ' 641' ?*DD '5?' ?4' D14ED- C' 2&F' '+512 C' -A2-(' '&' 2' 65@

" $' G #"?'#' ?' >$' & L &#' $' $ >' 0! &'#' ?' D# "L / +' !' ?# '" *' $ >'#+- L $ & V' $>' '# / '!' G$' / ' G# ? ' ?#' $/'#& V' 6' G$' $# /' ' ?'#+- $ ' - ' *' + /$/ '/' '$ /'& $-' / ' +$> < G?#&?' $ '#' ?' G /' *' ?' $+' $? ' !' +$/'#' - $' & /' D# '" ' ' ?' - 0 #&' $ >V' 6' *' $ "' $ '$ /' + ' ?$'*#' ' ? $ /'$ $ ' 6#' / ' '$ /'? #' G$' & $ /' D' *' $, /$' ; # & $" -' $ ' ' $ '2', # &' F'/#$ '2 $ > ' -' -# ' -'&& '' A '8 $ &# '*0'(@ A ' + '* ? '$&& ' *' ? '# L /#'#/ $ ' '' '##'-'24(' ' *' ?#' 6# > $ >' ? '-$ "> #K ' ?' , C'* # /' / '? ' $&L & + $ /' G' U' #' #L & '& $ # #+$' #' ' - $' * +# $+' - / ' ?$' $$-$' * ' '# #' "# $' #$' & & $' * &#0 ' #, '' -' # :$ $ - ' +$#' #' + L /# V' - ' -# $ +' &' &#

E4&-A? 26-51' -A5' F5652-' 46' 51'G&4 2(' A5' @2?' 2+ 5' -4' 15?*E5' 4D512-'4&?' 4&' 2' E415' 641E'F2+ 5' ?:2 5' -A2&' 12&:5' A2F' @'-&5??5F' 641' :5&-*1'5?' A155' 21G5' 21E'5?' @515' 12'?5F(' 4&5' -4' 15-1'5$5' 2662'1?' '&' -2 C(' 2' ?5D4&F' -4' D5&5-12-5' '&-4' D2'&' +C' -A5' @2C' 46' 4&-2.' 12+'2(' 2&F' 2' -A'1F' -4' :14??' '&-4' 4*??' 4&(' 2&F' G5-' D4??5??'4&' 46' -A5' ?-14&G' D4?-' 46' 2 ?2?(' -A5' H5C' 46' -A5' E4*&-2'&' D2??5?' '&' -A2-' M*21-51' @4' 6 55-?' @515' 2 ?4' 5M*'DD5F' '&' -A5' D41-?' 46' 5&42' 2&F' 21?5' 5?(' -A5' 2?-' 46' @A':A' @2?' -4' ?*DD41-' -A5' '&$2?'4&' 46' 4*?B ?' 4&' +C' 2' F5?:5&-' 4&' -A5' :42?-' 46' 2-2 4&'2' A5?5' $21'4*?' :41D?' @515' '&-5&F5F' -4' 2:-' '&' :4&:51-(' 2&F' -A*?(' +C' 4&5' G12&F' ?'E* -2&54*?' E4$5E5&-(' D2'&' @2?' -4' +5' 2??2' 5F' 4&' -A155' ?5$512' D4'&-?' 46' A51' -51B 1'-41C' A5' 15?* -?' F'F' &4-' :4115?D4&F' @'-A' -A5' E2G&'6':5&:5' 46' -A5' 2DD212-*?U

A5' 21EC' F5?-'&5F' -4' E21:A' 4&' ''"4&-212+'2' @2?' D2:5F' *&F51' -A5' :4EE2&F' 46' 2&' F0 +15-(' 62-A51' 46' -A5' T'&G' 46' 2$2115(' 2 4&G' -A5' 614&-'51?' 46' @A4?5' F4E'&'4&?' '-?' 14*-5' &5:5??21' C' 2C' 51F'&2&F' A2F' 2??*15F' A'E?5 6' 46' -A5' 62$4*12+ 5' F'?D4?'-'4&?' 46' -A'?' D1'&:5(' -A5' ?'-*2-'4&' 46' @A4?5' H'&GF4E(' E415' -A2&' '-?' ?-15&G-A(' E2F5' A'?' 61'5&F?A'D' 'ED41-2&-' 2&F' -A5' ' 41F' F0 +15-(' @A5-A51' 614E' 2' F'15:-' *&F51?-2&F'&G' @'-A' -A5' D2&'?A' E4&21:A(' 41' 65216*' ' 46' -A5' :4&?5B M*5&:5?' @A':A' E'GA-' 15?* -' -4' A'?' ?4&' 614E' -A5' A4?B -' '-C' 46' -A5' 2--51(' F5-2'&5F' -A5' 641:5?' '&-1*?-5F' -4

I' 8$+# ' 6# ' /' $ & ' #$' +'#'--'4EE 4E2 A +' +':'--'(E@'(EB'A' =' /' + # '&?'J#J'$-' =' $' 6# '/0 -' +''###'--' + # ' $ M$# ' +'J#' F4@MA F43 A 8 #&&#$ /# #' =

< S :

A'E ?4 4&G 2E4&G -A5 + 52H 2&F +2115& 62?-&5??5? 46 -A5 E4*&-2'&?(-A2- 2- 5&G-A(5JA2*?-5F +C 62B -'G*5 2&F @2&- 46 644F(-A5 21EC E5 -5F 2@2C @'-A4*- 5$5& 152:A'&G -A5 5&5EC0? +41F51? 9

A5 641:5 F'15:-5F 2G2'&?- 4*??' 4& @2? 46 2 E415 641E'F2+ 5 :A212:-51 - @2? :4EE2&F5F +C -A5 21U:A2 F5 '5*J(2 +12$5 2&F 5JD51'5&:5F 466'B :51(-A4*GA E*:A +14H5& +C 2G5 2&F +4F' C '&6'1E'B -'5? - 2E4*&-5F -4 E415 -A2& -@5&-C -A4*?2&F E5& -? ?-15&G-A(A4@5$51(2C :A'56 C '& '-? &*EB +51? - @2?(@'-A -A5 J:5D-'4& 46 2 65@ -A4*?2&F 2&?M*5&5-?9*&F51 ' '2E F5 2 21:H(6 E2F5 *D 46 -A5 211'515.+2& 46 -A5 H'&GF4E(2&F -A5 *&F'?:'B D '&5F E' '-'2 614E -A5 G152- -4@&? 46 2&G*5F4: '-A -A'? &*E514*? 2112C -A5 15&:A E21?A2 5&-51B 5F 4*??' 4& @'-A4*- 4DD4?'-'4&(2&F?2- F4@& +56415 2?2? 4& -A5 -A 46 5D-5E+51 <

A5 4 F :2?- 5 46 2?2?(@A':A A2F +55& :211'5F @'-A4*- E*:A F'66':* -C +C -A5 15&:A '& -A5 D15B :5F'&G @21(A2F +55& D*- '& 2 F565&?'+ 5 :4&F'-'4& *&F51 -A5 ?*D51'&-5&F5&:5 46 5F14 2$2114(2- -A5

1 6# / $'$ $ +:- -22EA 22F
?'Q# "* $'$ - +#L
/ -- ? -$ $" * ? &?'#* $ +- / ? "? ?# / +# # $ /'# / 0'#$ $ > /# * /# $ / ?# /$ "? $ "$ # / $ $ - /" * ? ?# *#/ # > $ 6# /(-$" +'###' -F4@ " 0 ? * 0

?# / D * # P /(##' --' 2E4' 23B . ? $/ G# & * / ?#+G# ?# ?# $+ $D ? *$L + M $ * / (A + *$+#$ G# ? -$" * +$ & ?$?# > A G? - # ? /#" +# # > + G > > $ 0 * ?# - # / # 2(*(*#"? 0 0> ? ?$ / * ? & + + J & # $ &? & 6# / # H + ##' - 4)5

' : ' ' ' <

:4E E5&:5E5&-' 46' -A5' D15?5&-(' 2 -A4*GA' -A5' 15D2'1?' @515' &4-' C5-' @A4 C' :4E D 5-5F ' 51F'&2&F(' 4&' -A5' 2DD142:A' 46'-A5' 5&5E C(' A2F' -A14@&' 2' -A4*?2&F' D':HB 5F' E5&' '&-4' -A5' D 2:5(' @A':A' @2?' @5 ' $':-*2 5F' 2&F' D14$'F5F' 641' 2' ?'5G5N' @A' 5' 2' :41D?' 46' ' @2?' D 2:5F' *&F51' A'?' :4*?'&(' 4&' 15F51':' F5' 4 5F4(' *H5' 46' $2(' @'-A' 41F51?"-4' -2H5' *D' 2' D4?'-'4&' '&' -A5' &5'GA+4*1A44F(' @A515' A5' E 'GA-' @2-:A' -A5' E 4$5B E5&-?' 46'-A5' 5&5E C(' 2&F' 2&&4C' A'E' 2?' 621' 2?' D4??'B + 5' +C' :*--'&G' 466'A'?' ?*DD '5? 9

51F'&2&F(' '&' -A5' E52&' @NA' 5(' 4?-' &4' -'E 5' '&' 5&B 641:'&G' 5$'5?' -A14*GA4*-' -A5' H'&GF4E '' 'U'-A' @A':A' A5' E 'GA-' 2F$2&:5' -4' -A5' 15 '56' 46'-A5' +5 52G*515F' 641B -15??(' A' 5' -A*?' 4::*D'5F(' A5' 15:5'$5F' ?*:A' 2:B :4*&-?' 46'-A5' M*55&0?' '&F'?D4?'-'4&' 2?' '&F*:5F' A'E' -4' M*'-' J2G4&(' @A515' A5' -A5&' @2?(' 2&F' A2?-5&' +C' 12D'F' ,4*1&5C?' -4' 2?-' 5' A5' 2::4*&-?' @515' D14+2+ C' 5J2GG512-5FN' A5' 64*&F' &4' :2*?5' 641' 'E E5F'2-5' 2 21E' 4&' A'?' 211'$2 (' 2&F' ?2+5 2(' 5$51' 152FC' -4' ?2:1'6':5' A51' 4@&' '&: '&2-'4&?' -4' -A5' D*+ ':' @52 (' D51?*2F5F' A'E' -4' 15-*1&' -4' -A5' ?:5&5' 46' 4D512-'4&?(' @A515' A'?' D15?5&:5' 2-' -A'?' ,*&:-*15' @2?' ?4' 'E D41B -2&-' 41G5--'&G' A51' ' &5??(' ?A5' E2F5' -A5' E4?-' *&@521'5F' 56 41-?' 641' 2??5E+ '&G' -144D?' @'-A4*-' F5 2C' -4' ?*DD41-' A51' A*?+2&F' A5' 12&F' 4&B ?-2+ 5' 46' 2?-' 5' @2?' :4E E'??'4&5F' -4' 12'?5' 5$'5?' -A14*GA' 5$51C' D21-' 46' -A5' H'&GF4E N' 2&F' -A5' D1'&.

I' $ $' / ' 8 K$ ' > $' A 9 # $' $ ' + ' ' ' #0' ' ' &' #J' A' ' 6# ' / ' $' ' &' #' A N 0$ &$' > ' / ' $"' ' + ' :' --' 22F 224 A 8$+# ' + ' ## ' ' JJJ' &$-' J###' &' 6# ' / ' $ & ' + ' ' ' -' (E)' J#

:'D2 &4+' '-C 6 4:H5F '&' @'-A -A5'1 15-2'&51?' 614E -A5 621-A5?-' D14$'&:5?(' 2 52G51 -4 4+5C -A5 :2 46 -A5'1 +5 4$5F E'?-15??' A*?' ?-15&G-A5&5F(' 51.' 'F'&2&F(' @A4?5 A52F.M*21-51?' @51 '[5?-2+ '?A5F 2-' '14&2(' ?2@' A'E?5 6 '&' 5??' -A2&' 2' E4&-A '&' D4?B ?5??'4&' 46 2 641:5 @A':A(' '&: *F'&G -A5 ?*DD '5?' 46 12G4&(' 2E4*&-5F -4 -5&' 41 -@5 $5 -A4*?2&F A41?5(' 2&F -A155 41 64*1 -'E5?' -A2-' &*E+51 46644- 5 &4 4&G51 F5 2C5F A'?' E21:A(' 2&F 2+M*-' UA5 E'FF 5 46 :-4+51 D*-' A"'? 21EC '&' E4-'4&(' D14D4?'&G -4 5665:-' 2',*&:-'4&' @'-A -A5 *H5 46 $2(' -A5&' C'&G +56415 51D'G&2&(' 2-' 2 65@' 52G*5?' F'?-2&:5 614E 2 ??9

?2+5 2(' A4 @2?' 2-' 5G4$'2(' @2?' E2F5 2:M*2'&-B 5F +C 15G* 21 5JD15??5?' @'-A 5$51C E4$5E5&-' 46 -A5 21EC A5 &4 ?44&51 521&5F '-?' F5D21-*15 614E '14&2U -A2&' ?A5 @2?' 6' 5F @'-A F'?M*'5-*F5 2-' -A5 D14?D5:-' 46 2 ?D55FC 5&:4*&-51 @'-A -A5 5&5EC @A4?5 F5652-(' @A2-5$51 G 41C '-' E'GA-' 15B 65:-' 4& A51 4@& 21E?(' :4* F +5 D*1:A2?5F 4& C 2-' -A5 5JD5&?5 46 A1'?-'2&' + 44F A5 @14-5 '& 521&5?-' -51E?' -4 A51 A*?+2&F(' 15M*5?-'&G A'E &4-' -4 F1'$5 A'?' 5&5E'5?' -4 F5?D2'1 +C :4?'&G *D -A5'1

I > $ $ $ &$-'#J A 9 #$' 0# -$'A $/K' 6# / > $ &$-'&J&'##'&J&'##'A $ 0$!$ $ $ $##'2@E4'A' $L /'$' 6# /' $:' +'#' -'### ?'+ '$? #&' $&& *' ?' #"' *' $ $'#' 0' * /'#' ?'& - / &' *' 8 K$' > $' /$ /'* +' ?

-$ #?'&$+-' ?#'# /#'#/ $' , $ >' +# '#' '$ /' $ + ' # /' ?' /# #+#$' - ' *'&$- $#' *' ?' >$'" $ /'$ /' ?# #" $-? ' *' ?'& G ' 6' ' /'#' ?'$ +>'$' ?#' #+ ' $ /'G$' - '$'$'#' - $L # ' *'$/' $ $'/' > $' $ /' #&' #' #0' '$' +'#' -'@@2

15-152- -4 -A5'1 4@& 2&F(+*- -4 52$5 $5&G52&:5 -4 'E -4 @A4E 2 4&5 '- +5 4&G5F A5 D2??5F(A51 F2C?(-4G5-A51 @'-A A51 @A4 5 A4*?5A4 F('& 62?-'&G 2&F :4&-'&*2 D12C51(2&F('& -A5 651$4*1 46 A51 D'4*? L52 (D51?4&2 C $'?'-5F -A5 ?5$512 15 '. 0U4*? A4*?5? 46 -A5 :'-C(F'?-1'+*-'&G 2 E? 2E4&G -A5'1 A4 C '&E2-5?(2&F 'ED 41'&G -A5E A*E+ C -4 ?*DD ':2-5 -A5 E'GA-C -4 2$51- -A5 'ED5&F'&G :2 2E'-C 9

A5 D12C51? 46 -A5 F5$4*- M*55& 2&F A51 :4*1- 64*&F 62$4*1 @'-A 52$5& 6 T'&G 51F'&2&F 152:A5F 51D'G&2& 4& -A5 < -A 46 :-4+51(2&F 4A -A2- ?2E5 &'GA- -A5 15&:A E21?A2 (6'&F'&G A'E?5 6 *&5M*2 -4 -A5 15&:4&-15 @'-A -A5 :4E+'&5F 641G5? 46 D2'&(+14H5 *D A'? :2ED(2&F(?5--'&G 6'15 -4 A'? -5&-?(+5G2& A'? 15-152- -4@21F? -A5 614&-'51(A2$'&G :4&?*E5F &521 C ?'J @55H? ?'&:5 6'1?- 4D5&'&G -15&:A5? 51F'&2&F D15??5F :4?5 4& A'? 6 C'&G 5&5EC(@A4?5 1521 ?*?B -2'&5F ?4E5 2&&4C2&:5 614E -A5 D2&'?A ; (' '& '-? D2??2G5 -A14*GA -A5 F56' 5? 46 -A5 ?'5112? A5

I $ > - -# $?#G"/>&#$# -&& J### G/"$>-#? ?>$$-$#>$?G#?##$?#&**$$G$? * ?#*$#?*$/'#" 0L '#6&&/ *?#"$&-#L G#?->$#"/0 +#"?>GU?$?L *0',-#? ?$*?'#"$/'#L &#?+&?$#$/?+L 0?-/&?$/#- ?+*?##=""-L #G?#&?'?G'-"$ V-&& J###.?$L /?0$0G$-#? +*$+##$8D$/L +$?$?#?#$$

:

< ;' P ' : ' '

15-152-(' A4@5$51(' @2?' :4&F*:-5F' '&' -44' G44F' 41F51' -4'
2 4@' 2&C' E2-51'2 ' 4??' -4' +5' '&6 ':-5F' 4&' -A5' 15&:A('
@A4' ?*::55F5F' 2-' 5&G-A' '&' ?A5 -51'&G' -A5E?5 $5?' *&B
F51' -A5' :2&&4&' 46' 21+4&&5(' *D' -4' @A':A' D 2:5' -A5C'
@515' D*1?*5F' +C' -A5'1' $':-41'4*?' 645' 5$512 ' D 2:5?'
4&' -A5' 614&-'51(' 2?' 54:2-5(' 2 E5(' 'G52&(' 4M*5641-('
2&F' 4-A51?(' @515' 2+2&F4&5F' -4' -A5' D2&'21F?(' @A4'
D' 2G5F' -A5E' 46' @A2-5$51' @2?' @41-A' :211C'&G' 466M'
@'-A4*-' 2&C' $'4 5&:5(' A4@5$51(' -4' -A5' D51?4&?' 46'-A5'
'&A2+'-2&-?(' @A4E(' 2?' 2' A1'?-'2&' D4D* 2-'4&(' '6'@5'
215' -4' +5 '5$5' 21-C1(' 51F'&2&F' 156*?5F' 5$5&' -4'
E2H5' D1'?4&51?9

A5' D2&'?A' E4&21:A' E2F5' &4' 2--5ED-' -4' 15-2'&'
-A5?5' 2:M*'?'-'4&?M' +*-(' A2$'&G' F'?E2&-5F' ?4E5' 46'
-A5' -4@&?' @A':A' 466515F' E4?-' 15?'?-2&:5(' 15-*1&5F'
42F5F' @'-A' -A5' ?D4' ?' 46' $':-41C' -4' A'?' 4@&' F4E'B
&'4&?' R' 2F' A5' +55&' 2?' G44F' 2' G5&512 ' 2?' A5' @2?

I' 9 # $' 6# ' +'#' #0' ' ' 8$ +' /# & ' $/' ' $'
&$-' #' ' A' 0$ &$' > ' / ' & & ' J' -#'
$"' +'## ' JJJ' &$-' J###' #$ #' $" 0$ ' $/' +# #$' -$ +'
& J# A $ > ' -# '&& J#' A' J' '0 '#$' # #' -'
$ 0$!$ ' $ ' '$## '2@E4' $' '#/'$& +' ' #'& &#'
A' $' / ' $ $&# ' $ '& ' $' ' /'? '
&$-'&J&'###'A 8$+# '6# ' / ' # ' $' ' + ' ? # +'
$ & ' +' ' --' (E3' (E5 A' $&# ' ' /' " ' # '
>' $'&$ $'J# A '# / ' ; # ' 0 '!$+' +# #$ #$'&# &# ' / '
& $" $ ' '/#$ ' / ' K$ " ' ' ? >" ' $- '
' $ > ' + ' '?$' ' ! ' ? &' & -$' ' & $ $ '
?$ /' ' *' $0 $' &+' $ # / < + $' ' # &# '
- ' # ' "$ /' ' 0 # "# "' ? ' $J#+ +' / /# ' $' /# ' , '
+>' ' 7 ' ' ? '& L ' # ' &$ /$+ +' '
$ >'? '# / " '# '$'+ ', L ' +0 # +' J $' 6# -$ # '#" '
' $# ' *' $ &$ +'$"$# ' +# #$+ ' $#, $ / '!$& $+'
? ' $? #&' D# "' * '?# ' # # ' # # ' -$ # ' & $&? >+$ /$+ V'
'# ' ?# ' -$ #& $ ' !' ; $ ' ' ? ' $ /# $' *' $ $'
& & ' /# ' + # #' # / K' '&& J##

‘ : ‘ ‘ <

2‘ ?-2-5?E 2&(K‘ ?2C?‘ 2‘ D2&'?A‘ A'?-41'2&(‘ R‘ A5‘ E 'GA-‘ A2$5‘ D5&5-12-5F‘ -4‘ -A5‘ :5&-15‘ 46‘ 12&:5 K9‘ 51B F'&2&F(‘ A4@5$51(‘ @2?‘ -44‘ D1*F5&-‘ -4‘ 2--5E D-‘ :4&B M*5?-?‘ @A':A‘ :4* F‘ 4& C‘ +5‘ E2'&-2'&5F(‘ '6‘ E2'&B -2'&5F‘ 2-‘ 2 (‘ 2-‘ 2&‘ '&6'&'-5‘ 5JD5&?5‘ 46‘ + 44F‘ 2&F‘ -152?*15‘ 5‘ A2F‘ ?*6 6':'5&- C‘ $'&F':2-5F‘ A'?‘ A4&4*1‘ +C‘ E55-'&G‘ A'?‘ 645‘ ?4‘ D14E D- C(‘ 2&F‘ F1'$'&G‘ A'E‘ -1'B *EDA2&- C‘ 4$51‘ -A5‘ +41F51M‘ 2&F‘ A5‘ D1565115F(‘ 'H5‘ 2‘ :2*-'4*?‘ D1'&:5(‘ &4-‘ -4‘ 1'?H‘ 2 ‘ A5‘ A2F‘ G2'&5F‘ +C‘ 2--5E D-'&G‘ E415(‘ +*-‘ -4‘ 5E D 4C‘ A'?‘ D15?5&-‘ ?*::5??5?‘ 2?‘ 2‘ $2&-2G5.G14*&F‘ 641‘ 5&-51'&G‘ 4&‘ &5G4-'2-'4&(‘ '&‘ @A':A‘ 2-‘ -'E5?‘ A5‘ D 2:5F‘ E415‘ 15 '2&:5‘ -A2&‘ -A5‘ ?@41F

&‘ -A'?(‘ A'?‘ G44F‘ ?-21‘ ?-' ‘ 6*1-A51‘ 62$4*15F‘ A'E ‘ A5‘ 21E2F2(‘ 5M*'DD5F‘ 2-‘ ?4‘ E *:A‘ :4?-‘ +C‘ -A5‘ 15&:A‘ H'&G‘ 2-‘ 21?5' 5?(‘ A2F‘ &4‘ ?44&51‘ D*-‘ -4‘ ?52‘ -A2&‘ '-‘ @2?‘ 2??2' 5F‘ +C‘ 6''1'4*?‘ -5E D5?-?(‘ 2&F‘ ?4‘ 621‘ :1'DD 5F‘ -A2-‘ '-‘ @2?‘ 4+ 'G5F‘ -4‘ 15-*1&‘ -4‘ D41-‘ @'-A4*-‘ 5$5&‘ 5665:-'&G‘ 2‘ F5?:5&-‘ 4&‘ -A5‘ D2&'?A‘ :42?-

A5?5‘ 2::*E * 2-5F‘ F'?2?-51?‘ ?4‘ F'?A521-5&5F‘ 4*'?‘ Z (‘ -A2-‘ A5‘ :4&?5&-5F‘ -4‘ 5&-51‘ '&-4‘ &5G4-'2-'4&?‘ 641‘ 2‘ ?*?D5&?'4&‘ 46‘ A4?-' '-'5?(‘ 2&F‘ 2&‘ 21E'?-':5‘ @2?‘ 6'&2 C‘ 2112&G5F(‘ -A14*GA‘ -A5‘ E5F'2-'4&‘ 46‘ A'?‘ D5&B ?'4&51‘ 15F51':(‘ 5J.H'&G‘ 46‘ 2D 5?(‘ +5-@55&‘ -A5‘ A4?-' 5‘ E4&21:A?‘ -‘ 5J-5&F5F‘ 4& C‘ -4‘ -A5'1‘ A515F'.

1‘ ‘ 6# ‘ / ‘ $'$ $‘ +$ ‘G /‘?$' ‘ #' /‘ ‘ &$ >‘ + ‘ : ‘ - ‘ 224 0$&D‘ ? ‘ #/# " ‘ *‘ / * $‘ ‘ ?#‘ '# / ‘ G?‘ G$ ‘ - ‘ # ‘ G ‘ $ / V‘ *‘ G ‘ $ ‘ ‘ 0 L ?# ‘ &$+-$#" ‘ + ‘ ‘ ?$' ‘ # ' ‘ ?#+ ‘ /# $ /‘ / # /‘ 0 ‘ *‘ ? ‘ $+ ‘ -# # ‘ ‘ * +‘ ? ‘ - #‘ $ ‘ ? ‘ $ ‘ $ ‘ ? ‘ $> ‘ U‘ *‘ ? ‘D# "‘ ?$/‘ $ >‘ *‘ # ? -‘ K$‘?# ‘bx ‘ - /‘'#" >‘ ‘$‘ &?L * ‘ ; # & $" $ ‘

‘ □

< =

-21C F4E'&'4&?ℕ -2 C 2&F -A5 :''0:*E,2:5&- ?52? +5'&G ?-! 56- 4D5&' 2? 2 :4E E4&' 215&2(4& @A':A -A5 1'$2 D21-'5? E'GA- E55-(2&F ?5-- 5 -A5'1 15?D5:B -'$5 -'- 5? +C -A5 ?@41F A5 -1*:5(6'1?- :4&: *F5F 641 6'$5 E4&-A?(@2? ?*+?5M*5&- C D14 4&G5F -4 -A155 C521? - G2$5 51F'&2&F(@A2- A5 E4?-' &55F5F(5'?-'15 2&F E52&?' -4 D14$'F5 641 -A5 ?5:*1'-C 46 A'? -2 '2& D4??5??'4&?(4& @A':A -A5 F21H ?-41E 46 @21 @2? ?44& -4 +*1?- @'-A -5&64 F 6*1C 9

A5 *&641-*&2-5 15F51':(@A4 A2F +55& F12@& 614E +'? 4+?:*1'-C -4 -2H5 D21- '& -A5?5 &5G4-'2-'4&?(F'5F '& -A5 64 4@'&G C521 - '? ?'&G* 21 -A2- -A5 2?- 2:- 46 A'? D4 '-':2 '65 ?A4* F A2$5 +55& -4 E5.- F'2-5 2 D52:5 +5-@55& -A5 F4E'&'4&? 46 -@4 E4&. 21:A? @A4 A2F *&'-5F -4 ?-1'D A'E 46 A'? 4@&

A5 15?* -? 46 -A'? :2ED2'G& @515 2? A4&4*12+ 5 -4 D2'& 2? -A5C @515 F'?2?-14*? 2&F A*E' '2-'&G -4 4*'? Z (@A4 A2F ?55& A'? 21E? +266 5F 4& 5$51C D4'&-(2&F 2 A'? E'GA-C 2DD212-*? 46 6 55-? 2&F 21E'5? F'??4 $5(2?U'6 +C 5&:A2&-E5&-('& 5?? -'E5 -A2& '- A2F +55& D15D21'&G A5 'E E5F'2-5

 ! " #$ # # "

9 # $ $ / $" + #0 &$- ' A 0$ &$ > / $" + ## JJJ &$- J### & J# A $ > - -# - && J#' A $ J$ $ && > " $ + #' &$- J'## A 8$ #0$> 6# / - + ## #0 J#J &$- J'#' A $&?#$' #' "$K# # +$ $ +$ JJ'##

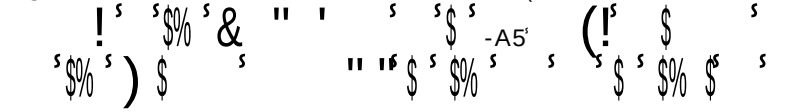
:$ # $ #& $?

G $D #/ * # H U / +$ " $# / *$# $ -$#J & = +- / # * $= '$# B / $ $ $'# V = -# - && J#' A $ J$ # / / #'#' - 2(3. $ +$? G/ ?$:$ #L $ K'* # ? - ?$- ? 0 D > ?# - #&>'# ? !$ D !' " * #0 - # !$+$# , $##/ #

/ #' V

:4&?'F512+ 5' F5G155(' -4' -A5' 'E D14$5F' 41G2&'?2-'4&'
2&F' -A414*GA' F'?:'D '&5' '&-14F*:5F' +C' -A5' ?4$515'G&?'
'&-4' -A5' &2-'4&2 ' E ' '-'2' 2-' -A5' : 4?5' 46' -A5' 441'?A'
@21(' @'-A4*-' @A':A' '-' @4* F' A2$5' +55&' ?:21:5 C' D4?B
?'+ 5' -4' :4&:5&-12-5' ?4' D14 E D- C' 4&' 2' F'?-2&-' D4'&-'
?*:A' 21G5' E2??5?' 46' E 5&(' 2 ' @5 ' 5M*'DD5F' 2&F'
-12'&5F' 641' 2:-'$5' ?51$':5 ' 4' ?44&' @2?' -A5' &2-'4&'
:2 5F' -4' 655 ' -A5' 5665:-' 46' -A5?5' @'?5' D14$'?'4&?

-' -A5' 15? -?' 46' -A5' :2 E D2'G&' 215(' 26-51' 2 (' 5??'
@41-AC' 46' &4-':5' 2?' '&F':2-'&G' -A5' 15?4*1:5?' 46' -A5'
:4*&-1C(' -A2&' 2?' 5$'F5&:5' 46' 2' D51$2F'&G' D2-1'4-':'
655 '&G(' @A':A' :4* F' 2 4&5' E 2H5' -A5?5' 15?4*1:5?'
2$2' 2+ 5 ' &?-52F' 46' -A5' &2114@' 4:2 ' ,52 4*?'5?'
@A':A' A2F' ?4' 4&G' 5?-12&G5F' -A5' D54D 5' 46' -A5' ?5B
D212-5' D14$'&:5?(' 2&F' E 415' 5?D5:'2 C' -A4?5' 46' -A5'
1'$2 ' ?-2-5?' 46' 12G4&' 2&F' 2?-' 5(' 614 E' 4&5' 2&4-A51('
-A515' A2F' +55&' G12F*2 C' 12'?5F' *D' 2' :4 E E 4&' &2B
-'4&2 ' ?5&-'E 5&-(' 'H5' -A2-' H&'--'&G' -4G5-A51' -A5' :4&B
?-'-*5&-' D21-?' 46' 4&5' G152-' :4 E E 4&@52 -A ' -' -A5'
6'1?-' 2 21E' 46' '&$2?'4&' 4&' -A5' 614&-'51' 46' 12G4&(' -A5'
@A4 5' 5J-5&-' 46' -A5' ?'?-51' H'&GF4 E (' 614 E' -A5' G155&'



2' :4 E E 4&' :4*&-1C(' ?5&F'&G' 641-A(' 2?' @5' A2$5' ?55&('
'-?' ?@21E?' 46' @211'41?' -4' 15D5 ' -A5' 645(' 2&F' 14 ' +2:H'
-A5' -'F5' 46' @21' *D4&' A'?' 4@&' 2&F ' A2-' 2' :4&B
-12?-' F'F' 2 ' -A'?' D15?5&-' -4' -A5' :4 F' 2&F' D21?'E 4&'4*?'
A2&F' @'-A' @A':A' -A5' &2-'4&(' -A'1-C' C521?' +5 6415(' F52 -'
4*-' '-?' ?*DD '5?' -4' T '&G') 4A&' (' 51F'&2&F0?' 62-A51('
@A5&' A5' @2?' 56-' -4' :4D5' ?'&G 5.A2&F5F' @'-A' -A5

□ ’

@A4 5’ D4@51’ 46’ 12&:5(’ ’&’ -A’?’ $51C’ M*21-51’ 46’ 4*?B ?’ 4&’P *:A’ @2?’ -A5’ :4&?5M*5&:5’ 46’ -A5’ G 41’4*?”) &@A’:A’ +14*GA-’ -4G5-A51’ -A5’ D5--C’ 2&F’ A’-A51-4’ F’?:41F2&-’ -1’+5?’ 46’ -A5’ 5&’&?* 2’ *&F51’ -A5’ ?2E5’ 1* 5(’ 2&F’ +C’ :152-’&G’ :4E E4&’ ’&-515?-?(’ 2&F’ 2’ A21B E4&’4*?’ D1’&:’D 5’ 46’ 2:-’4&(’ @2?’ ?’ 5&- C’ D15D21’&G’ -A5E’ 641’ :4&?-’-*-’&G’ 4&5’ G152-’ &2-’4&(> 4&5’ 2&F’ ’&B F’$’?’+ 5(’ 2?’ ’&-5&F5F’ +C’ A2-*15

? ’ G? ’ ?$’ ’ ’ ? + ’ ’?$/’ &&$ # ’ ’ - ’?# L #&$’ # , # # ’ G# ’ &$ & >’ #+$"# ’ ’ G?$’ ’ " / ’ ? ’ " $ ’-$ ’ *’ ? ’ $ $#’ ’#’ ’0 ’0 # ’ 7# ?’ ? ’ J& - # ’ *’ $’ * G’ $/# "’ # ’ ? ’#’ &?’$’ +$ ’ *’# & # &>’$ /’ & $/#& # ’ # ’ ? ’ / $# ’ ’ ’ *’& +- $ # ’ ?$’#’ + ’ $ + ’$’? - ’ ’ #K’ ? ’ ’ $ - &’ *’ $ >’-$ #& $’$" ’ $’#’G /’?’ ’ $ * ’ ’ ? ’ &$ ’$ ’$’*$# ?* ’ #D ’ *’$ ’ # /#’#/ $’* +’$’/ & #- # ’ #+- >’ *’?#’ - +# ’* $ &?’ *’ ? ’ /#**#& >’ +#"?’ +’ ’0 ’ + ’ /’ G’ ?$’G ’ $ ’ ’ ? ’ +# ’$ /’ 0 $ ’ $&D’ *’ $ #$’ ?# ><’ 0 ’ #’ *$& ’ ? ’ ’# # ’ #’ $? ’ /$KK /’ ?$ ’ $ # /’ 0>’ ? ’ + ’ & #"? ’ ? G ’ ’ ’ ? ’ -$?’ $ /’ ? ’# *# # >’ ’$ # ’ - # ’ *’ ’# G’ * +’ G?#&?’ ’ >’ 0! & ’ # ’ & +- $ /’ #/ ’ ? ’ &$’ $ /’ -$ >’ - ! /#& ’G?#&?’G ’?$/’ ’ & ’# ’ ? ’& L +- $ >’ -$ # ?’?# #$ ’G ’?$’ ’ G’$’? ’ *’ $ # $’ - L ! /#& ’ ’ ’ #+*$’ $0 ’ ’ ?< G?# ’ ? ’ + ’ *’ ? ’ & ’ *’$& # ’ & $ # >’0 " ’$’ ? $ /’$//# # $’# $&L & $&# ’# ’ ? ’ " #-# "’ $ /’ & / ’ &? #& ’ *’ $ & ’$ /’ -$#

? ’ + / ’ # ’ G?#&?’ - 0 #&’ " #$ # ’G ’ & / & /’$’ ?# ’ - # /’# - ’ # ’*# ? ’ +0$ $ + ’ # ’ ’ $ &?’$* ’ ?’ ? >’G ’ "$ / /’$’ ? ’ - $’& & ’ *’ ? ’ ’ L #" # ’G?#&?’ ? ’ $ # ’$’ $ " ’?$/’ ’ #"?’ ’# * ’ ? >’ G ’ /’ #D ’ ? ’ ’ *’?#’ - #’$ ’$**$# ’ / ’?#’ G ’ > ’ G# ? ’ ? ’ -$ #&#-$ # ’ *’$ >’ ? ’0 $ &?’ *(? ’ " ’ +

A5C @515 ?A14*F5F(-A5156415(*&F51 2& 'ED5&5-12+ 5 ?5:15:C(@A':A D51E'--5F ?*:A 15?* -? 4&C -4 5E51G5 '&-4 'GA-' 2? ?*'-5F -A5 E4&21:A' $5&-A5?5 15?* -? :2&&4-' +5 15 '5F 4& 2? 6*1&'?A'&G -A5 -1*5 H5C -4 -A5 '&-5&-'4&? 46 -A5 D21-'5?' A5 ?:'5&:5 46 -A5 :2+'&5-(2? -A5& D12:-'?5F(2*-A41'?5F ?*:A 2 ?C?-5E 46 21-'6':5 2&F ?A2E5 5?? F*D ':'-C(2? G152- C 'ED2'15F -A5 :15F'- 46 -A4?5 466':'2' F4:*E5&-? @A':A @5 215 2::*?-4E5F -4 15G21F 2? -A5 ?*15?- 64*&F:
() 2-'4&? 46 A'?-41C

A5 4&C 15:41F? @A':A @5 :2& 15:5'$5 @'-A 6* ' :4&6'F5&:5 215 -A5 D1'$2-5 :4115?D4&F5&:5 46 :4&-5ED4121'5?(@A':A(6'14E '-? $51C &2-*15('? 5J5ED- 614E E4?- 46 -A5 15?-12'&- 2&F 2665:-2-'4&? '&:'B F5&- E415 41 5?? -4 5$51C @41H F5?-'&5F 641 -A5 D*+ '- 5C5' *:A :4E E*&':2-'4&?('&F55F(:4E5 'H5 -A5 $4':5 46 F5D21-5F C5212# 2&F @A5&(2? '& 21-C1? :2?5(-A5C D14:55F 614E 4&5 @A4?5 2:*-5B &5?? '? :4E+'&5F @'-A ?'&G* 21 +DD41-'E'-'5? 641 4+?51$2-'4&(-A5C 215 46 '&5?-'E2+5 $2 *5' &?-52F 46 5JD4?'&G -4 *? 4&C -A5 15B ?* -?(-A5C 2C 4D5& -A5 '&-51'41 @41H'&G? 46 -A5 E2:A'&51C(2&F @5 5&-51 '&-4 2 ' -A5 ?A'6-'&G F4*+-?(D2??'4&?(2&F D*1D4?5?(@A':A 2U-2-5 -A5 E'&F? 46 -A5 2:-41?' !&641-*&2-5 C(-A5 :A2'& 46 :41B 15?D4&F5&:5 A515(2? '& ?'E' 21 :2?5?(@A5& &4- 41'G'&2 C F5?'G&5F 641 A'?-41':2' *?5?(&5:5??21' C?*6651? 614E 4::2?'4&2' +152H? 2&F '&-511*D-'4&?' A5 ?:2--515F G52E? @A':A 215 -A14@& 4$51 -A5 E4?- D14E'&5&- D4'&-?(A4@5$51(?A5F ?4 ?-14&G 2 'GA-(2? E2B -51'2 C -4 2'F *? '& G14D'&G 4*1 @2C -A14*GA -A5 F21H51 2&F E415 D51D 5J5F D2??2G5? 46 -A5 ?-41C

A5 4+?:*1'-C @A':A A2&G? 4$51 -A5 D51'4F A2? &4- +55& F'?B D5 5F +C -A4?5 E4F5E @1'-51?(@A4('H5 21' 2?('& A'? @5 ' H&4@&@41H $ % ' '& ' ' ' % (2665:- -4 -152- -A5 ?*+,5:- DA' 4?4DA':2 C(D2C'&G 5?? 2--5&-'4& -4 62:-? -A2& -4 -A5'1 :2*?5? 2&F :4&?5M*5&:5?' A5?5 '&G5&'4*? D51?4&?(?5 F4E @' '&G -4 -2H5 -A'&G? 2? -A5C 6'&F -A5 E(?55E -4 -A'&H -A2- -1*-A '? 4&C -4 +5 152:A5F +C F5 $'&G F55D +5 4@ -A5 ?*162:5' & -A'? ?521:A 26-51 E415 D1464*&F :2*?5? 46 2:-'4&(-A5C 15,5:- @A2-5$51 '? &2-*12' 2&F 4+$'4*?' A5C 215 '&5JA2*?-'+5 '& :4&,5:-*15? 2&F 6'&5.?D*& :4&: *?'4&?('&6511'&G M*'-5 2? E*:A 614E @A2- '? &4-'?2'F 41 F4&5(2? 614E @A2- '?' & ?A41-(-A5C D*- -A5 152F51 2? :4EB D5-5C '& D4??5??'4& 46 -A5'1 A5141? -A4*GA-? 4& 2 ' 4::2?'4&?(2? 2&C D1465?5F 14E2&:5 @1'-51 @4* F $5&-*15 -4 F4' ' -A'? E2C +5 $5'C 2G1552+5(2&F-4 D51?4&? 46 52?C 62'-A $51C ?2-'?62:-41C N

<

' Z

$" " ' , " - # ! . / $. ' .&' $" 0 %%%%%&- ! ' 1
6' ' ' 6 ' 8 8

<

' E *?-' &4@' -*1&' 4*1' 5C5?' -4@21F?' -2 C(' @A515' -A5' ?4*&F?' 46' @21(' @A':A' A2F' 2-5 C' F'5F' 2@2C(' @515' 2G2'&' A521F' '&' @' F51' F'??4&2&:5' -A2&' 5$51' *1' 2--5&-'4&(' A'-A51-4(' A2?' +55&' -44' 5J: *?'$5 C' F'15:-5F' -4' E515' E' '-21C' E2&45*$15?' -4' 2 4@' *?' -4' F@5 ' E*:A' 4&' -A5' :4&F'-'4&' 46'-A'?' *&A2DDC' 2&F' A5' F1521C' D14G15??' 46'4*1' ?-41C' 4$51' 6'5 F?' 46' + 44F' 2&F' +2-- 5' E'GA-' &2-*12 C' F'?D4?5' -A5' 'E2G'&2-'4&' -4' 2C' -A5' ?:5&5' 46'2:-'4&' '&' ?4E5' 1*F5' 2&F' ?2$2G5' 2G5%' 2&' 2G5(' 2-' +5?-(' 46' 65*F2' A514'?E(' @A5&' -A5' 5&51G'5?' 46' -A5' ?4*' :4* F' +5' 14*?5F' 4& C' +C' -A5' 6'51:5' F'&' 46' @21

21' 4-A51@'?5(' A4@5$51%' -A5' -5&-?' 46' -A5' A4?-' 5' 21E'5?' @515' &4@' D'-:A5F' '&' -A5' +4?4E' 46' -A5' E4?-' 4$5 C' 2&F' :* -'$2-5F' 15G'4&?' 4&' -A5' G 4+5' %' '&A2+'-5F' +C' 2' D54D 5' @A4' A2F' :211'5F' -A5' $21'4*?' 21-?' 46' D4 ':C' 2&F' ?4:'2' '65' -4' 2' F5G155' 46' D5165:-'4&' 5 ?5B @A515' *&H&4@&' %' @A4?5' &2-*12' 15?4*1:5?' A2F' +55&

2*GE5&-5F +C 2 -A5 2DD'2&:5? 46 '&G5&*'-C 2&F '&F*?-1C @A4?5 :'-'5? @515 :14@F5F @'-A E2G&'A. :5&- 2&F :4?- C @41H? 46 D*+ ':*-' '-C '&-4 @A4?5 D41-? 5$51C @'&F -A2- + 5@ @26-5F -A5 1':A 615'GA-? 46 F'?-2&-: 'E5? @A4?5 -A4*?2&F A' ? @515 :4$515F -4 -A5'1 $51C -4D? @'-A -A5 G4 F5& 2+4*1? 46 -A5 A*?+2&FE2& 2&F @A4?5 '&-5 5:-*2 F5$5 4DE5&- ?A4@5F'-?5 6(&4- 4& C '& 2 '+512 ?:A4 21?A'D 621 4*-B ?-1'DD'&G -A2- 46 -A5'1 :4&-5ED4121'5?(+*- '& @41H? 46 ''E2G'&2-'4&(2&F 46 5 5G2&- 21- E415 D21-':* 21 C(@A':A 1'$2 5F -A5 +5?- F2C? 46 2&-'M*'-C A5 D51'4F +56415 *?('&F55F(-A5 :4EE5&:5E5&- 46 -A5 6'6-55&-A :5&-*1C(@2? -A2- 46 -A5'1 E51'F'2& ?D5&B F4*1(@A5& -2 '2& G5&'*?(+152H'&G -A14*GA -A5 : 4*F @A':A A2F -5ED4121' C 4+?:*15F '-? 521 C F2@&(?A4&5 4*- '& 6* 56'* G5&:5 641 @5 215 &4@ -4*:A'&G 4& -A5 2G5 46 2:A'2$5 '(1'4?-4(2&F ':A5 &B G5 4(> -A5 G4 F5& 2G5 46 54 Z

- '? 'ED4??'+ 5(5$5& 2- -A'? F'?-2&:5 46 -'E5(-4 :4&-5ED 2-5 @'-A4*- 655 '&G? 46 ?2F&5?? -A5 62-5 46 ?*:A 2 :4*&-1C(-A*? ?*FF5& C :4&$51-5F '&-4 2& 215&2 641 -A5 + 44FC 5JA'+'-'4&? 46 -A5 G 2F'2-41? 46 *B 14D5 -4 +5A4 F A51 -14FF5& *&F51 644- +C -A5 $51C &2-'4&? 4& @A4E ?A5 A2F 6155 C D4*15F -A5 'GA- 46 :'$' 'L2-'4& -4 ?55 -A5 6'51:5 ?4 F'51C 46 *14D5(614E -A5 2&*+5 -4 -A5 2G*?(?@55D'&G 'H5 2& 21EC 46 4:*?-? 4$51 A51 6'5 F?(F56' '&G A51 D 52?2&- D 2:5?(2&F 12'?'&G -A5 ?A4*- 46 +2-- 5 41 46 +1*-2 -1'*EDA *&F51 -A5 ?A2F4@ 46 -A4?5 E4&*E5&-? 46 G5&'*?(@A':A A2$5 +55& -A5 F5 'GA- 2&F F5?D2'1 46

E

?*::55F'&G 2G5? -@2? -A5 4 F ?-41C 46 -A5 4-A? 2&F 2&F2 ? 2:-5F 4$51 2G2'& A4?5 E415 156'&5F 21-? 46 -A5 :2+'&5-(4& @A':A -A5 -2 '2&? @515 2:B :*?-4E5F -4 15 C(E*:A E415 -A2& 4& -A5 ?@41F('& -A5'1 F'?D*-5? @'-A 4&5 2&4-A51(@515 46 &4 2$2' 2G2'&?- -A5?5 1*F5 '&$2F51?(@A4?5 ?-14&G 21E 52?' C +14H5 -A14*GA -A5 ?*+- 5 @5+? 46 D4 ':C @A':A 5&B -2&G 5F -A5 E4$5E5&-? 46 5?? 641E'F2+ 5 2F$51?21'5?N -@2? -A5 -1'*EDA 46 +1*-5 641:5 4$51 :'$' 'L2-'4&(> 4&5 46 -A5 E4?- A*E' '2-'&G 5??4&? +C @A':A 14B $'F5&:5 A2? ?55&' 6'- -4 15+*H5 -A5 D1'F5 46 A*E2& '&-5 5:-9

A5 62-5 46 -2 C '&:* :2-5? 2 E4?- 'ED41-2&- 5??4& '-A 2 -A'? 4*-@21F ?A4@ 46 D14?D51'-C(A51 D4 '-':2 '&?-'-*-'4&? A2F G12F*2 C 4?- -A5 $'-2 D1'&:'D 5 @A':A :4* F 2 4&5 G'$5 -A5E ?-2+' '-C 41 152 $2 *5 A5 641E? 46 6155F4E('&F55F('&E4?-

I U - #$ #&$ $ $ / / + / -$
? (&&, $ / " (2 $ #/ $<
$ - $ " ($ $ / & $
? 2 - 0 -- # " $ /#-$
? '$ +$# 0 - - /# $
$ &#/ / +$ / $ / $ $_
" # $ "#$ ' * $ " $
- " +$ &&# -$
$ +$ &$ / (# *#" # $ & $
?# -# $ $ &?#$+$ / # + $ -$/$ -$ -$/ -
, #+# # $ 2 $ #&?(- _
E - & # -# $ # ($_
?# & / $?# $#" $ + V S
+0 - + ## -

?# J, # # # > #&# = $ &? G$ & + - /0> +0 * # M ? G?#&? ?$/ $? - # / *' G?#&? G $ $-- $ / ? $+ 0! & $ # " # & ? U $ #$ +#$ V * =

'&?-2&:5?(' A2F' ?*&H' *&F51' -A5' *?*1D2-'4&' 46' ?4E5' 2?D'1'&G' :A'56' $51C@A515' D2-1'4-'?E' @2?' 4?-' '&' -A5' E4?-' '&-5&?5' ?5 6'?A&5??' 412 ' D1'&:'D 5' @2?' 2-' 2?' 4@' 2&' 5++' '&' D1'$2-5' 2?' '&' D*+ ':' '65' A5' A2&F?' @A':A' ?A5F' -A5'1' '+512 ' D2-14&2G5' 4$51' G5&'*?' 2&F' 521&'&G' @515' -44' 46-5&' 15F' @'-A' + 44F' A5' :4*1- C' D15:'&:-?(' @A':A' ?55E5F' -A5' 62$4*1'-5' A2*&-' 46' -A5' *?5?(' @515' -44' 46-5&' -A5' D':*152&' ?-C' 46' +1*-'?A' ?5&?*2 '-C' @A' 5' -A5' A52F' 46'-A5' :A*1:A' '-B ?5 6(' @A4?5' ?-2-'4&('5J2 -5F' 4$51' -A2-' 46'5$51C' @41 F C' D4-5&-2-5(' ?A4* F' A2$5' 12'?5F' A'E' 2-' 52?-' 2+4$5' -A5'1' G14??51' $':5?(' @2?' ?*&H' '&' -A5' 64* 5?-' :411*DB -'4&?' -A2-' F5+2?5' D441' A*E2&' &2-*15' 2?' '-' ?*1B D1'?'&G' -A5&' -A2-' -A5' -155(' -A*?' :2&H515F' 2-' A521-(' @'-A' 2 ' -A5' G44F C' ?A4@' 46' + 4??4E?' 4&' '-?' +12&:A5?(' ?A4* F' A2$5' 62 5&' +56415' -A5' + 2?-' @A':A' &4@' F5B ?:5&F5F' '&' ?*:A' D'-' 5??' 6*1C' 614E' -A5' E4*&-2'&?0

2F' -A515' +55&' 2&' '&$'G412-'&G' &2-'4&2 "655 '&G(' 2&C' :4E E4&'D1'&:'D 5' 46':42 '-'4&' +5-@55&' -A5' -2 '2&' ?-2-5?N' A2F' -A5C(' '&' ?A41-(' +55&' -1*5' -4' -A5E?5 $5?N' -A5C' D4??5??5F' 2+*&F2&-' 15?4*1:5?' '&' -A5'1' @52 -A(' -2 5&-(' 2&F' ?*D51'41' ?:'5&:5(' -4' A2$5' ?A'5 F5F' -A5'1' ?4' ' U4E ' $'4 2-'4&' ! &641-*&2-5 C(' @A' 5' -A5' 4-A51' *14D52&' ?-2-5?' A2F' +55&' 2*GE5&-'&G' -A5'1' ?-15&G-A' '&:2 :* 2+ C' +C' -A5' :4&?4 'F2-'4&' 46' -A5'1' ?:2--515F' 612GE5&-?' '&-4' 4&5' @A4 5(' -A4?5' 46' -2 C(' '&' -A5' 2+B ?5&:5' 46' ?4E5' G152-' :5&-12 ' D4'&-' 14*&F' @A':A' -4' 12 C(' A2F' G14@&' E415' 2&F' E415' :4&6'1E5F' '&' -A5'1' 41'G'&2 ' F'?*&'4&' A*?(' @'-A4*-' :4&:51-' '&' 2:-'4&(' 2&F' F5?-'-*-5' 46' -A5' $'$'6C'&G' 'ED* ?5' 46' D2-1'4-':

'&-'E2-5F -A'?? ?-' E415 *&5M*'$4:2 C +C -A5?*DB D '5?? ?A5 2 4@5F A51 :'-'L5&?? -4 :211C '&-4 21 5-2 F'@'&G -A5 2-5 :2ED2'G&(2&F +C 4-A51 '&F'15:-2'F 46 2 ?'E' 21 &2-*15 F*1'&G -A5 D15?5&-N 641 2 @A':A ?A5 '@2?? 4&5 F2C -4 A5 :2 5F -4 2 A52$C 15:H4&'&G +C A51 5&5E'5?

A5 F'?D4?'-'4& 46 -A5 D2D2 :4*1-2 -4@21F?? -A5 15&:A E4&21:A @2?? ?-' 5??62$4*12+ 5N 2&F'-'-44H &4 D2'&?? -4 :4&:52 -A'?? 26-51 A'?? 15$51?5?? '& 2D 5? 44& 26-51 -A5 F5652-' 46 51'G&4 2('-' 5&-515F '&-4 :4115?D4&F5&:5 @'-A 4&?2 $4 F5 41F4$2(2&F 2 B -A4*GA 5J2&F51 156*?5F -4 +152H 4D5& C @'-A 12&:5(2&F ?'G& 2 -152-C @'-A -A5 D2&'?A ?4$5B 15'G&?(A5 D 5FG5F A'E?5 6 -4 F4 ?4 4& -A5 15F*:-'4& 46 25-2 & -A5 E52& -'E5(A5 6155 C 2 4@5F -A5 152- 2D-2'& -4 12'?5 ?*:A 5$'5?? 2?? A5 :4* F '& 4E5(+56415 -A5 $51C 5C5?? 46 -A5 15&:A 2E+2??2B F41N ?4 '-- 5 A2F -A5 'E E5&?5 :4&:5??'4&?? 46 4*'?('&: *F'&G -A4?5 46 D1'&:'D 5 2&F A4&4*1(2$2' 5F -4 ?5:*15 -A5 6'F5 '-C 46 -A'?? -152:A514*?? 2 C U

- # + ? ' " /' *?#' / >' ? ' $ # ' 0 # "' ? ' & +L
G$ ' *' &? $?#-' U' &' + ' + /# +' *' /#- +$ #&' # L
- $& ', /' ? &' " # #' ?$&' & ' $' ?$' #+ ' $ > '
+- $ ' $ # +' $+, ' G? ' '?# ' ? "?' : L
'# + ', # $ # $+'&$ ' ' ' #& ' * +' ?# ' ">- #$ ' +# # '
$ '# #" ' # " $+' ?# ' D' &?$ " ' * ' ? ' #+ ' *' ? '
$ +' $+'-$ #$+' ' +$& =' # ' *' -$# ' +#"?' - L
$+' '#.'- / +' '$#$ ' 0$0 >' ?$' '0 '- '$# /' ' '
$, ' # ' #" $ ' # $ +' $ + ' ? ' /#**#& # ' *'$/#- L
$#' ' " $ +' J' #- ' +$ #&' $ # ' ? '?#+ *' '
+#?# $ ' -# $' $ ' -'5@' I' *' ?# ' ' +
$+ ' " ', $'/#J#R' ' ?' V*1'-2,U '?-'F5 5E'-4E'
' ? ' $? #&' ; ' '+' :' :2D' JJJ$'''' J$'''' >'
- ' -# $ ' -'&&J '#.' ? ' 5E+4(?-41' '&'L'-4E'''' '+'
0! & # '?$' 'G #"?'#+/ 0 = $' > 2E('?-(F5 5&'?5(-4E

'-A -A5 ED5141 2J'E''2&(&4-@'-A?-2&F'&G 15D52-5F -152-'5?(A5 @2? 4& ?:21:5C +5--51 -51E? A2-D1'&:5 @2? :4&&5:-5F @'-A D2'& +C -A5 E2B -1'E4&'2 2 '2&:5? 46'A'? 62E'C(2&F &4 5?? 2$51?5 -4 12&:5 614E D51?4&2 655 '&G(@A':A @'-A -A5 4E2,41'-C 46 E'&F? 4D512-5? E415 D4@516* C -A2& E4-'$5? 46 ?-2-5 D4 ':C 5 A2F(E4154$51(2 @2C? 15G21F5F -A5 4::*D2-'4& 46 '2& +C -A5 2--51 2? 2& '&61'&G5E5&-('& ?4E5 E52?*15(46 A'? 'ED51'2 1'GA-? A5 D2&'?A G4$51&E5&-(2$2' '&G '-?5 6 46 -A5?5 655 '&G?(5&F52$4*15F -A14*GA '-? E'&'?-51 4&)*2& 2&*5 -4 ?-'E* 2-5 2J'E''2& -4 -A5 '&$2B ?'4& 46 4E+21FC ? -A5 5ED5141(A4@5$51(F5B E2&F5F(2? *?*2 (2 '+512 ?*+?'FC 641 :211C'&G 4& -A5 @21(T'&G 51F'&2&F(@A4 @2? ?5 F4E '&:4EB E4F5F +C 2 ?*D516 *'-C 46 6*&F?(D1565115F 15?51$'&G -A5E 641 A'? 4@& 5&-51D1'?5? -4 A2L21F'&G -A5E 4& -A5 M*'J4-':? ?:A5E5? 46 A'? 2 CM +*-(2 -A4*GA -A5 &5G4-'2-'4&? @515 2--5&F5F @'-A &4 15?* -(-A5 2E'B :2+ 5 F'?D4?'-'4&? 46 -A5 *?-1'2& G4$51&E5&-' @515 5$'&:5F +C -A5 D51E'??'4& G'$5& -4 '-? ?*+,5:-? -4 ?51$5 *&F51 -A5 +2&&51? 46 4&?2 $4(@A515 '&F55F(2? @5 A2$5 2 152FC ?55&(-A5C 641E5F (4 6 A'? +5?- -144D? 9

- @A' 5 4'? Z F15@ ?4 '-- 5 2??'?-2&:5 614E 2+142F(-A5 A521-'&5?? @'-A @A':A -A5 @A4 5 15&:A D54D 5 5&-515F '&-4 A'? 655 '&G? 2- -A'? :1'?'? E2F5 A'E &521C '&F5D5&F5&- 46 '-M 2&F '& 2& '&:15.

- 4() A 8 #&&#$ /# # I 9 #$ 6# + #0 + #0 '# -422 /2B(@ &$- 'A J 6 * = A $&& # #$ --))32 #$ ' # &?$- JJ### (

F'+ C ?A41- ?D2:5 46 -'E5 D 2:5F A'E '& 2 :4&F'B -'4& 641 15?*E'&G 4D512-'4&? 4& 2 621 E415 641E'FB 2+ 5 ?:2 5 -A2& +56415 A5 D15:5F'&G 62' *15? '& -2 C A5 2--1'+*-5F '& 2 G152- F5G155 -4 2& 4$51@55&B '&G :4&6'F5&:5 '& -A5 ?*D51'41'-C 46 A'? 4@& -144D?(2&F A'? &5G 5:- -4 ?*DD41- -A5E @'-A -A5 &5:5??21C 15'&641:5E5&-? 2&F ?*DD '5? 5 &4@ D14$'F5F 2G2'&?- -A'? +C 15E'--'&G 21G5 ?*E? -4 4E5(2&F 5?-2+ '?A'&G 2ED 5 E2G2L'&5? 46 G12'& 2&F E' '-21C ?-415? -A515(*&F51 -A5 F'15:-'4& 46 :4EE'??21'5?(641 -A5 E2'&-5&2&:5 46 -A5 21EC 5 5M*'DD5F @'-A4*- 4?? 46 -'E5 2 21G5 21E2E5&- 2- 5&42(*&F51 -A5 21M*'? 46 2 *LL4(641 -A5 15 '56 46 25-2(?-' + 4:H2F5F +C -A5 D2&'21F? 5 4+-2'&5F 2 ?E2 ?*DD C 46 E5& 614E A'? -2 '2& 2 '5?(2&F ?*+B ?'F'L5F 2 :41D? 46 S @'??(-A5 ?-15&G-A 46 A'? '&62&-1C @A' 5 -A5 15E2'&F51 46 A'? 21EC(:4ED15B A5&F'&G 2 6'&5 +4FC 46 :2$2 1C(2&F -A5 E4?- :4EB D 5-5 -12'& 46 21-' 51C(D14+2+ C('& *14D5(@2? F12@& 614E A'? 4@& F4E'&'4&?(4 *&-551? 46 -A5 A'GA5?- 12&H D15??5F 641@21F -4 ?51$5 '& 2& 5JD5F'B -'4& -4 @A':A -A5C :4&6'F5&- C 44H5F 641 -A5 $'&B F':2-'4& 46 -A5 &2-'4&2 A4&4*1 A5 :4EE2&F @2? '&-1*?-5F -4 -A5 21U:A2 F5 2 15E4*' 5(5?-55E5F -A5 +5?- G5&512 '& 12&:5 2&F -A5 @A4 5 2E4*&- 46 641:5(5J: *?'$5 46 -A2- 5ED 4C5F D51E2&5&- C '& -A5 6 55-('? $21'4*? C :4ED*-5F 2- 614E -@5&-C -4 -A'1-C -A4*?2&F E5& 9

$&& #' #$ # ' -')3' H ' -- ⓇR) ' 2)(c:$ # $ ' A ' 8 $# ' 6# ' / ' # 6# ' / ' #'H ' +' ' --

&' -A5' E4&-A' 46') * C' < (' -A5' 21EC' @2?' 4&' '-?' E21:A' 2:14??' -A5' +142F' D 2'&?' 46' 4E+21FC' +*-' 4&' 152:A'&G' 21E2(' -A5' 2DD4'&-5F' D 2:5' 46' 15&F5L$4*?' 641' -A5' @'??' 2&F' -2 '2&' E51:5&21'5?(' @2?' +14*GA-' -4' 2' A2 -' +C' -'F'&G?' 46' 2&' *& 44H5F.641' 5$5&-(' -A5' IF52-A' 46' 4D5' 5J2&F51' ' 5' 5JD'15F' 4&' -A5' <S-A' 46' *G*?-' < (' 2-' -A5' 2G5' 46' ?5$5&-C.-@4(' -A5' $':-'E(' -A515' '?' $51C' '-- 5' F4*+-(' 46' D4'?4&' A5' A2F' D15D215F' 641' 4-A51?' -A*?' : 4?'&G' 2&' '&62E4*?' '65' +C' 2' F52-A' 5M*2 C' '&62E4*?(' 5' @2?' 2' E2&' 46' *&F4*+-5F' -2 5&-(' 2&F' *&:4EE4&' 5&51GC' 46':A2B 12:-51'' +*-' A'?' D4@51?' @515' D51$51-5F' -4' -A5' @41?-' ' D*1D4?5?(' 2&F' A'?' G14??' $':5?' @515' *&15F55E5F(' '6' @5' 215' -4' :15F'-' -A5' 15D41-' 46' A'?' E4?-' 15?D5:-2+ 5' :4&-5ED4121'5?(' +C' 2' ?'&G 5' $'1-*5' &' A'E' -A5' D2D2:C' 152:A5F' '-?' 4@5?-' F5G12F2-'4&' '?' D4&B -'6':2-5(' A4@5$51(' @2?' &4-' @'-A4*-' '-?' *?5' ?'&:5' Q-A2-' 14$'F5&:5(' @A':A' ?-' ' 5F*:5?' G44F' 614E' 5$' (' E2F5' -A5' ?:2&F2 (' @A':A' '-' 4::2?'4&5F' -4' -A5' A1'?B -'2&' @41 F(' 2' D1'&:'D2' ?D1'&G' 46' -A5' G41'4*?' 5B

$ *

43B 43) A + / + # ' &?' J#J' $-' ' / ' + ' ' + ' J#' ' A' $ #' $ #' /Q $ ' + ' J#' ' $ ' 2@E4 6# #$ ' $' $ ' /#** ' G#/ >' #' ' ? #' #+$ ' *' ?' &?' +0 ' 8 #&&#$ /# #' G? ' + / $ ' & +- $ # ' *' ' + ' #' $ >'* G /' / ' ' $D' ?' 0 ' ' L & &# ' ?# ' +' $' G# ?' ?' '$ # ' #+$ ' "#' ' 0>' ?#+' # ' / $# ' G?#&?' & #/ $0 >' J=

& /' ?$' $+ ' *' --' 4E3' 4E5' 42F 1' $&& #' #$ # ' -' 32' A= +0 ' :# #K' #0' '# ?' # ' & + >' G# ?' G?#&?' J$ / Q' +$# ' G ' $ /' G?# ' > ' &$ & >' & /' #' ?' 0 ' & ++ $ >' ' ?' " $' / $ # ' # ' G?#&?' ?' G$' ?' /' !' , ' J$ L / V' $>' ?' - - Q' +$# ' / ' & + # ' U' /#' ' / # ' -# '# ' Q>' $' $# '/$ ' $&?$# =

: ' 6

A5 F52-A 46 -A'? D4&-'66 4::2?'4&5F &4 D21-':*B 21 F'?M*'5-*F5 2- -A5 D2&'?A :4*1-(@A515 A'? 'E B E412 '65 A2F +55& $'5@5F @'-A *&F'?G*'?5F 15D14B +2-'4&(2&F E2F5 -A5 ?*+,5:- 46 E415 -A2& 4&5 D15??B '&G 15E4&?-12&:5(2? @5 A2$5 2 152FC ?55& '?D*+B ': :4*1?5 A2F +55& 2? '-- 5 -4 '-? ?2-'?62:-'4&M ?'&:5(2 -A4*GA 2 D2&'21F +C +'1-A(+5'&G 2 &2-'$5 46 2B 5&:'2(A5 A2F D2:5F A'E?5 6 2 E4?- @A4 C 2- -A5 F'?D4?2 46 4*'? Z ('& 15-*1& 641 -A5 :4*&-5&2&:5 26641F5F +C -A2- E4&21:A -4 -A5 '&'M*'-4*? ?:A5E5? 46 A'? ?4& 25?21 41G'2

A5 D4D5 F52-A @2? 2--5&F5F @'-A 'ED41-2&- :4&?5M*5&:5? 4& -A5 E4$5E5&-? 46 -A5 15&:A 4*'? 62$4*1'-5 E'&'?-51 21F'&2 F E+4'?5(A2F 4&G 44H5F -4 -A'? 5$5&- 2? 4D5&'&G -4 A'E -A5 ?*::5??'4& -4 -A5 -'212 5 &4@ A2?-5&5F '&-4 -2 C(-A5156415(@'-A A'? E2?-510? 2DD14+2-'4&(D14B D4?'&G -4 5&641:5 A'? D15-5&?'4&? +C -A5 D15?5&:5 46 -A5 15&:A 21EC(D2:5F(2? '- @4* F ?55E(@'-A -A'? $'5@ 2- A'? F'?D4?2

A5 21EC(2::41F'&G C(@2? 41F515F -4 2F$2&:5 -4@21F? 4E5(2&F A2 - @'-A'& 2 65@ E' 5? 46 '-? G2-5? A5 :4&: 2$5 46 :21F'&2 ?(-A5& :4&$5&5F

0 , ' , / # #' /$- $# , -$ * # &?$+0 * $ # -# M $*$& / &$/$' / '# # < $ $ " 0 *$$ - # , 0 +-#$$# $0 &? , # $ ' $ 0# /$ $, #*$ $# + & - '$ - - / - # " * M$ $ & - / - # " / -$- # -$ / + #, # - /$ M" # / # $ $ $&& +-$" / - # / # &? - $ $ / /$ / #$ "## / &? - / # 0 $ J $" / $ - - L $& V PP #& / &$ / $- / $ #0 # ? , / #' -4E ' D <;

-4' ?*DD C' -A5' $2:2&:C' '&' -A5' D4&-'6':2-5(' @515' 6' B 5F' @'-A' '&F'G&2-'4&' 2-' -A'?' 2--5ED-' -4' 4$512@5' -A5'1' 5 5:-'4&\' 2&F' -A5' :'-'L5&?' +5A5 F' @'-A' 2&J'5-C' -A5' 5&:2EDE5&-' 46' -A'?' 641E'F2+ 5' 641:5' *&F51' -A5'1' @2 ?(' 2&-':'D2-'&G' ?4E5' :4*&-512:-'&G' E4$5E5&-' 4&' -A5' D21-' 46' -A5' 152-' 2D-2'&(' @A':A' E'GA-' '&$4 $5' -A5'1' :2D'-2 (' 2 152FC' '&' 2' ?-2-5' 46' 2&21:AC(' '&' 2 ' -A5' A41141?' 46' @21' 4&?2 $4(' '&F55F(' A2F' ?5&-' 641@21F' 2' F5-2:AE5&-' .46' +5-@55&' -@4' 2&F' -A155' -A4*?2&F' E5&' *&F51' 5&F4L2' 2&F' 2+1':'4' 4.' 4&&2(' @A4' D4?-5F' -A5E?5 $5?' '&' -A5' &5'GA+4*1A44F' 46' -A5' :'-C(' @A515(-A5C' :4* F' 4+?51$5' -A5' E4$5E5&-?' 46' -A5' 5&5EC 9

-' 5&G-A' 21F'&2' F0 E+4'?5(' C'5 F'&G' -4' D*+ ':' 655 '&G(' 2&F' -A5' 15D15?5&-2-'4&?' 46' D15-5&F5F' 61'5&F?(' :4&?5&-5F' -4' -A5' 15E4$2' 46' -A5' 15&:A' 641:5?' 614E' -A5' &5'GA+4*1A44F(' 2&F' -1*?-5F' 641' ?*::5??' -4' A'?' D51B ?4&2' '&6 *5&:5' 5' 4$515?-'E2-5F' '-?' @5'GA-' -' '?' 6415'G&' -4' 4*1' D*1D4?5' -4' F5-2'' -A5' D14:55F'&G?'' 46' -A5' 15$515&F' +4FC' -A*?' :4&$5&5F' -4' ?*DD C' -A5' :A2'1' 46' -' 5-51' A5C' 215' F'?D 2C5F' 2-' 6*' 5&G-A' +C' -A5' -2 '2&' @1'-51?(' 2&F' E*?-' +5' 2 4@5F' -4' 641E' 2' E4?-' 5F'6C'&G' :A2D-51' '&' 5:: 5?'2?-':2' A'?-41C 6' -' '?' 5&4*GA' -4' ?-2-5' -A2-(' 4&' -A5' F5D21-*15' 46' -A5' 15&:A(' -A5' ?*6612G5?' 46' -A5' :4&: 2$5' 65' 4&' 2&' -2.

I' $&& #'-'3F'A' $-' X' 8 #&&#$ /# #' #' '-$ #& $' &?#$' #' "$K# ' #+$' $' ?$' $ /' ? +'G# ?'$'&# & +L +$' ? '#'###' '$'A' +-' $ #$#>'G?#&?'& /' &$ & >' 0' 2' :# #K' +'###' #0'#' ?$'' 0' J& / /' 0>' ' *' 0A' ++# $' ' # # ' ?'& &$'' # *' #$' #0' +'###' #0' JJ'###'A'9 # $' '#' --'42BA 423 $' +'''#0''&$-'J'##

'F

<S ' 7

'2&(' @A4' 2??* E 5F' -A5' &2 E 5' 46' '*?' (' 5D-5E +51' e;&F(' 2&F' @A4',*?-'6'5F' -A5' D4 ':C' 46'-A5' :A4':5' +C' FC'&G' '&' 5??' -'E 5' -A2&' A'?' +5?-' 61'5&F?' A2F' 2&-':'D2-B 5F(> @'-A'&' 2' E 4&-A' 26-51' A'?' 5 5$2-'4& 9

A5' &5@' $2:2&:C' @2?' 2-' 4&:5' ?*DD '5F' +C' -A5' 5 5:-'4&' 46')* '*?' (' :-4+51' <?-(' -A5' +5 'G515&-' D4&-'66'@A4' E 2F5' A'?' -'212' 2' A5 E 5-(' 2&F' A'?' :14?'51' 2' ?@41F' -' '?' 15E21H2+ 5' -A2-(' @A' 5' A'?' 6'51:5(' '&5J412+ 5' -5E D51' 56-' A'E' @'-A' ?:21:5 C' 2' D51?4&2' 61'5&F(' A5' :2E 5' -4' -A5' -A14&5' +C' -A5' *&'-5F' ?*6612G5?' 46' 52:A' 46' -A5' 1'$2' 62:-'4&?(' 46' 12&:5(' D2'&(' 2&F(' 2+4$5' 2 (' 5&':5(' @A4?5' 1*'&' '&' 15-*1&' A5' E 2F5' -A5' G152-' +*?'&5??' 46' A'?' 15?- 5??' D4&-'6':2-5 6

4' ?44&51' A2F' -A5' G2E5(' '&-4' @A':A' 21F'&2' F0 E +4'?5' A2F' 5&-515F' @'-A' ?*:A' D14?D5:-?' 46' ?*:B :5??(' +55&' ?&2-:A5F' 614E' A'?' G12?D' +C' -A5' ?*D51'41' 2FF15??' 46' A'?' -2 '2&' 1'$2 ?(' 2&F' -A5' 5 5:-'4&' 46' '*?' ' +55&' D*+ ':C' 2&&4*&:5F(' -A2&' -A5' 15&:A' 21E C' @2?' D51E '--5F' -4' 15?* E 5' '-?' E 21:A' 4&' 2D 5?(' 26-51' -A5' 4??(' > '2&' '115D212+ 5' 4??(' > '46' E 415' -A2&' 2' E 4&-A' ' ?-' ' G152-51' E '?641-*&5' A2F' +562 5&' '-(' '&' -A5' E 52&' -'E 5(' '&' -A5' ' &5??' 46' 15E 4*' 5(' '-?' :A'56(' @A':A' :4E D5 5F' A'E' -4' 15?'G&' -A5' :4E E 2&F' '&-4' -A5' A2&F?' 46'-A5' 21M*'?' 46' 2&-*2(' 2&' -2 '2&

I' +0 ' ':# #K' #0''#' -# + ' *' U' ' G ?>' $' A' ++# $ ' #' # ' -$ ' ' ' ?' ?# #$' H' +'###' #0'JJ'### ' $ > ' - ' '(&' '& ?' &# ' *' # 'G$' JL && J' + >'"$ * ' ' ; ' $L 0 $' G?' &$ /' ' + ' $&?#$' #' "$K' #+$'$' $ /' ?$ D "#'# "' '0'& 0 $L +$' ''#' A' +0 ' ' /'#' ?' &? &? '* ' ?' $-L :# #K' #0' '##

&4+ 5E2 (' @A49A5 F' -A5' ?5:4&F' ?-2-'4&' '&' -A5' 21EC'
5' @2?' 2' E2&' 46' ?4E5' E' '-21C' 5JD51'5&:5(' A2$'&G'
64*GA-' '&' -A5' 5&5-'2&' ?51$':5(' 2&F' 5F' -A5' 2 '5F'
641:5?(' @'-A' F4*+-6*' :15F'-' '&F55F(' 2G2'&?-' A21 5?'
' 2-' -A5' +2-- 5' 46' 41&4$4' '?' 5 5$2-'4&' @2?'
"E415' 2::5D-2+ 5' -4' A'?' 4@&' :4*&-1CE5&' -A2&' -4' -A5'
15&:AN' 2&F' '&' -1*-A(' A4@5$51' :4ED5-5&-' -4' 41F'B
&21C' 5J'G5&:'5?(' A5' @2?' 2 -4G5-A51' *&5M*2' -4' -A5'
D15?5&-(' '&' @A':A' A5' @2?' :4ED5 5F' -4' E52?*15'
A'?' G5&'*?' @'-A' -A2-' 46' -A5' G152-5?-' :2D-2'&' 46' -A5'
2G5 9

A5' D2&'?A' :4EE2&F51(' '&' -A5' E52&' @A' 5(' @2?'
F5-2'&5F' +56415' -A5' ?-14&G' D4?-' 46' 25-2(' '&-4' @A':A'
$5?' F0 UG15' A2F' -A14@&' A'E?5 6(' 2?' 2 152FC' &4B
-':5F(' @'-A' -A5' 6*G'-'$5?' 614E' -A5' 6'5 F' 46' 51'G&4 2('
@A515' A5' A2FU' +55&' ?*+?5M*5&- C' 15'&641:5F' +C' =
2FF'-'4&2' -144D?' *&F51' -A5' 21M*'?' 46' 2 *LL4'
14E' -A5?5' :'1:*E?-2&:5?(' 2?' @5' 2?' -A5' G152-'
?-15&G-A' 46' -A5' D 2:5(' 4&?2 $4' 5JD51'5&:5F' 2&' 4DB
D4?'-'4&(' -4' @A':A' 46. 2-5' A5' A2F' +55&' @A4 C' *&2:B
:*?-4E5F' '?' 5JD4?5F' ?'-*2-'4&' '&' -A5' D 2'&?('
&F51' -A5' G&?' 46' -A5' :'-C(' 4::2?'4&5F' -A5' 4??' 46'
E2&C' 46' A'?' +5?-' E5&(' 2&F(' 2E4&G' 4-A51?(' -A2-' 46'
A'?' 61'5&F' 4&' *G4' F5' 21F4&2(' 4&5' 46' -A5' 2-5'
$':-41?' 2-' 5E'&212(' @A4' @2?' ?A4-' F4@&' 2-' A'?' ?'F5'
@A' 5' :4&$51?'&G' @'-A' A'E' -' 5&G-A(' 26-51' 2' F5B
?D512-5' +*-' '&5665:-*2' 2--5ED-' -4' 5J-1':2-5' A'E?5 6'
614E' A'?' D51' 4*?' D4?'-'4&(' +C' 641:'&G' -A5' &5'GA+4*1.

I' 8$+# ' 6# ' /' $ &' 2B' A' $&& #' #$ # ' -'
+' :' --' (4@A (43' A' 8 #&= 34' A' '8 $# ' 6# ' /' #'
&#$ /# #' 2' /($' #0' '#' -' H' -' 2)4

'&G' 5E'&5&:5' 46' 4*&-' 1 2&F4(' A59 @2?' :4ED5 5F' -4' 15-'15' -4' 2' G152-51' F'?-2&:5(' 2&F' F12@' 466' A'?' 21EC' -4' -A5' 2F,2:5&-' $' 2G5' 46' 2?-5 4&5(' @A':A' E2C':2 ' *D' E415' 2G1552+ 5' 2??4:'2-'4&?' '&' -A5' 152F510?' E'&F(' 2?' -A5' ?'-5' 46' -A5' ' 2' 4112'2&2' 46' ':514(9' -' -A'?' D 2:5' A5' @2?' ?-' ' 4::*D'5F' @'-A' -A5' + 4:H2F5' 46' 25-2(' @A5&' A5' 15:5'$5F' '&-5 'G5&:5' -A2-' -A5' 15&:A' A2F' :14??5F' -A5' '+51' 2&F' @515' '&' 6* ' E21:A' 2G2'&?-' A'E ","

A' 5' 4&?2 $4' 2C' +56415' 25-2(' A5' A2F' +55&' '&B -5&-' 4&' :4 5:-'&G' ?*:A' 15'&641:5E5&-?' 2?' A5' :4* F' 614E' 5$51C' M*21-51' A5' 52D4 '-2&' F'$'?'4&' *&F51' 2$2114' A2F' 2 152FC' ,4'&5F' A'E(' 2?' @5 ' 2?' -A5' $':-41'4*?' 5G'4&?' 46' &F12F2' 614E' 2 2+''2' '?' ?-15&G-A' @2?' 6*1-A51' ?@5 5F' +C' -A5' 211'$2' 46' +5B -@55&' -@4' 2&F' -A155' -A4*?2&F' -144D?(' D2&'?A(' 51E2&(' 2&F' -2 '2&(' @A':A' -A5' 2?-' '2&' E'&'?-51(' 12&:'?:4' F5' 4,2?(' A2F' 5$'5F' '&' 4E5N' 2&F' A5' @2?' '&' F2' C' A4D5?' 46' 2' E415' 'ED41-2&-' 2::5??'4&' 614E' -A5' ?2E5' M*21-51(' -A14*GA' -A5' G44F' 466':5?' 46' -A5' 5&5-'2&' 2E+2??2F41' 2?- C(' A5' A2F' 4+-2'&5F' ?4E5' 2FF'-'4&2' 15:1*'-?(' 2&F' 2' 15E'--2&:5' 46' 2' :4&B ?'F512+ 5' ?*E' 46' E4&5C(' '&' 2' 6 55-' 46' 2-2 2&' ?A'D?' 2-5 C' 211'$5F' 614E' D2'&' '-A' 2 ' -A'?(' A4@5$51

I' #& (' & >' $' /' *' ?' /' --#$ ' G$>' 0>' ?' +#/G$>' 0 G ' 8$ $' $ /' &$ #&$'$ /'& / ' # $' ?' $ &# ' +# '$0 ' X' 'P '## :# ' ' :# ' G ' +# ' $ /'$?$ *'* +' $&?' * 'F@3 F@5 A ? #&$/ '8 ' ' # ' $ ' #,' #0'?#' $-# $ ' #0'?' &$-'J&' 'A =' &' '#.' ? ' +$# ' *'?# ' +$ L $' :# /# $ ' :' * '25 A' # ' $ /' *'?# ' +$ +' +$>' ' $ > ' -' -# ' -' # '0 ' /# & /' ' ? '0 / && J#

<S

2 A52$C 2E4*&- 46 211521? 15E2'&5F F*5 -4 A'? -144D? &D4'&-4 6 &*E+51? A5 @2? ?-' 621 '&65B 1'41 -4 -A5 5&5ECN &4 :4ED*-2-'4& ?@5 '&G -A5E A'GA51 -A2& -A155 -A4*?2&F A41?5(-@4 46 -A5E 'GA- :2$2 1C(2&F &'&5 -A4*?2&F 644- A5 ?-15&G-A 46 A'? 21EC 2C '& A'? D2&'?A '&62&-1C(4& @A4?5 -A4B 14*GA F'?:'D '&5(?-52FC &51$5(2&F ?-14&G 2--2:AE5&- -4 A'? D51?4&(A5 65 - A5 E'GA- :4&6'F5&- C 15 C & :2$2 1C(2&F ?-' E415 '& 21-' 51C(A5 @2? 621 +5 4@ -A5 15&:A(@A':A(-4G5-A51 @'-A A'? G152- &*E51'B :2 '&651'41'-C(E2F5 '- 'ED4??'+ 5 641 A'E -4 H55D -A5 4D5& :4*&-1C '? 4& C 15?4*1:5 @2? -4 G5- D4??5??'4& 46 ?4E5 D2?? 41 ?-14&G D4?'-'4&(@A':A 2C '& -A5'1 14*-5(@A515 A5 E'GA- F5-2'& -A5E - -A5 211'$2 46 6*1-A51 15'&641:5E5&-? ?A4* F 5&2+ 5 A'E -4 62:5 -A5E 4& E415 5M*2 -51E? A5 F55D ?-152E 46 -A5 21'G '2&4 D15?5&-5F ?*:A 2 '&5 46 F5B 65&:5 2? A5 @2&-5F 9

& -A5 -A 46 :-4+51(-A5156415(-A5 152- 2DB -2'& +14H5 *D A'? :2ED 2- 2?-5 4&5(2&F(2+2&B F4&'&G -A5 @A4 5 15G'+& &41-A 46 -A5 21'G '2&4 -4 -A5 5&5EC(?-1*:H '&-4 -A5 '&-51'41 46 -A5 :4*&-1C(2&F -44H D4?- 2- 2& 51E2&4(2 ?-14&G D 2:5 4&

1 9 # $ 6# + #0 ' &$- JJJ'### J ### J #' J '### '## A P '## :# $ 222 :# * F@3 FB5 A # + /# 6# / $ $# + J' - (2) A 8$ #0$> + - / 6# / -$ $ + '## #0 J#J &$- J'# A $ 6# /(-$" + '### --F@FMA F@) $L

#$ $ 6# / -$ $ #0 JJ'# &$- :

? $ ##$ G # / $? +$ *? -$L # ?* & G?#&? # 0 # * L /> * + ? &$ /# #L +$ &$ $ /& $/#& > $ $ * ? '$ # / $&?L + G?#&?! # /#

<S=

-A5 -A51 ?'F5 46 -A5 1'$51(:4$515F AC -A5 -@4 641B -15??5? 46 4&-5 2?'&49 2&F 4::2 5::2 &-4 -A'? 2?- A5 -A15@ 2 +4FC 46 F5-51E'&5F E5& *&F51 'U 2 +2(2&F @2'-5F :2 E C -A5 2DD142:A 46 -A5 5&5EC

- @2? &4- 4&G +56415 -A5 :4 *E&? 46 -A5 2--51 @515 F5?:1'5F '& 6* E21:A 4& 4&-5 41$4(2- 2 65@ E' 5?(F'?-2&:5 4& C 4& -A5 4DD4?'-5 ?'F5 46 -A5 21'G '2&4 6-51 2 +1'56 A2 - -A515(-A5C -12$51?5F -A5 +1'FG5 +56415 -A2- D 2:5(2&F 2F$2&:5F :4&6'B F5&- C 641@21F '& -A5 5JD5:-2-'4& 46 5&:4*&-51'&G '-- 5 15?'?-2&:5 614E 2 645 ?4 E*:A -A51 '&651'41 & -A'? -A5C @515 E'?-2H5& -A5 G211'?4& 46 4::2 5::2(2G2'&?- @A':A -A5C F'15:-5F -A5'1 21E?(A2&F 5F XA5E ?4 14*GA C -A2-(26-51 '& $2'& 5&F52$4*1'&G -4 :211C -A5 D 2:5 '& -@4 F5?D512-5 2??2* -?(-A5 21B M*'? 46 2&-*2 15?4 $5F -4 2+2&F4& -A5 2--5ED- 2 -4G5-A51(2&F(15:14??'&G -A5 1'$51(-4 ?55H 2 E415 D12:-':2+ 5 D4'&- 641 A'? D*1D4?5 4@51 F4@& 6

T55D'&G 2 4&G -A5 1'GA- +2&H(-A5156415(-4 -A5 ?4*-A.52?- 46 -A5 E4*&-2'&? 46 4&F'(A5 F5?:5&F5F &521 C -4 -A5 E4*-A 46 -A5 21'G '2&4(-A5 ?'-5(2? :4EE4& C ?*DD4?5F(46 -A5 2&:'5&- '&-*1&25 %,% A5

I ? -$ #$ / & $ & # / # +$ P '## :#$ 8 = $ # 0> + $ / $ '#** MBF
G# ?' $& # "# '# & - L ? / 8 $- #0 ## / / ? /#& # + $ > &'&## A $:#$ /# $: *' $ # & > - $? > * A 8 #&&#$ /# #2 / $ G & + - / ? G ' L + # #0 '#' --'4FB'4F) A - & ? 0 *' ? +$ > $ > H - -# - && J'## $ / ? $# > #&'.' $ /#L +$ / K' 6# & $- '# # *' - #' - 0$0 > L & JJJ'### # > $ # *$& > # ' / P' ? +$# *' ?# &# >

D 2:5' @2?' :4$515F' +C' 2'641-15??' :2 5F' -A5' -4@51' 46' -A5' 21'G '2&4(' 4::*D'5F' +C' 2'?E2 ' D2&'?A' G211'?4&(' @A4' E2F5' ?4E5'15?'?-2&:5(' +*-' ?*115&F515F' 4&' +5'&G' D51E'--5F' -4' E21:A' 4*-' @'-A' -A5' A4&4*1?' 46' @21' &' 15,4'&'&G' -A5'1' :4*&-1CE5&' *&F51' 4&?2 $4(' -A5' 2--51'@515' ?4' E*:A' '&:5&?5F' -A2-' -A5'G211'?4&'?A4* F' A2$5'C'5 F5F' 4&' 2&C' -51E?(' '&?-52F' 46' FC'&G' 4&' -A5'1' D4?-?(' -A2-(' 62 '&G' 4&' -A5E' @'-A' -A5'1' D'H5?(' -A5C' E2??2:15F' -A5E' 2 ' -4' 2' E2&' 4&?2 $4' F'F' &4-' -A'&H' D14D51' -4' D*&'?A' -A'?' 4*-12G5(' @A':A(' A4@5$51' ?A4:H'&G' -4' A'?' 4@&' 655 '&G?(' '&F':2-5F' 2' F5?D512-5' -4&5' 46' 15?4 *-'4&(' @A':A' A5' 65 -' A5' ?A4* F' A2$5' 4::2?'4&' -4' -2J' -4' -A5' *-E4?-' '&' -A5' D15?5&-' 5J'B G5&:C 9

A5' G14*&F' &4@' 4::*D'5F' +C' -A5' 21E'5?' @2?' 4^^%,U 2&F' ?@2EDC(' 2' :A212:-51' @A':A' '-' D4??5??5F' '&' 2&B :'5&-' -'E5?'% -A5' E21?A5?' 4&' -A5' ?4*-A51&' ?'F5' +5'&G' ?*DD4?5F' -4' +5' -A5' ?2E5' '&' @A':A' 21'*?' :4&:52 5F' A'E?5 6' 614E' A'?' 5&5E'5?' F*1'&G' A'?' D14?:1'D-'4&("6"

G?#&?' /' $0 ' * ' +# ' ? ' -$ # ?' $ +>' &$+- /' $0 ' ' ? ' + ?' *' ?' # ' $>' 8 #&&#$ /# #' !'# ' $' - $& ' $ ' # ' 0 ' ' ' ?' #"?' &$ /' 0>' #'>'* +' # ' '#&# # >' *' ?' $/' '$ &# ' /$>'#' $' ' ' $!% ' 2) ((% G$ ' *' **#&# ' +$" # / ' ' 0 # "' - ?$-' ?' +$? ' # ' & ' ' 0 ?' #/ ' *' ?' #' ' G?#&?' $ # '?#/'?#+ *\' =' ' $0 ' 8 "' #0'' ' -' .' ' #0'' # .' ? '?# #$ ' +$D ' /' $ # '2BF5'G# ?' $ $ 0 %' G ' 0 / ' # '$'0 $?' 2 ' ' -'22E F I) ' 2) ((' G$ '$' $+ ' 1' ? #&$' / ' 8 ' $-' #0' / #' /' ' * +' $' ?'$ L ##'&' '# A 'P '## :#$' $"' &# ' $' &$'0 '* +' 8 '* 'FB4 ?'/!$& ' # $' $' G ' X' ? '+$? ' *' # $' $0 ' ' +# ' ?= $ ' *' $>' 0 G ' ?' &# >' $ /' ?' # ? ' &$-'J'#'$ /' $0 ' #0 '' -' + ?' *' ?' # # ' ' # ' F44.' F/' ?' $+ ' /#/' $ ' #, ' #0'###'&$-'J' '#J .

- -A5 D15?5&- ?52?4&('-? &2-*12 A*E'F'-C @2? G152- C '&:152?5F +C 5J:5??'$5 12'&?(@A':A +5G2& 521 '51 2&F @'-A E*:A E415 $'4 5&:5 'A2& *?*2 A5 15&:A D4?'-'4& @2? &5'-A51 ?4 4@ &41 ?4 @5- 2? -A2- 46 -A5 D2&'21F? - A2F -A5 2F$2&-2G5(E4154$51(46 +5'&G ?*DD41-5F +C 2 @5 .D54D 5F 2&F 61'5&F C :4*&-1C '& -A5 1521(@A515 2C -A5 21G5 -4@&? 46 4&F'(-1'(2&F 25-2 @A' 5 -A5'1 6 55- *&F51 -A5 FE'12 15,2&(@A':A 14F5 2- 2&:A41 '& -A5 E4*-A 46 -A5 21'G '2&4(E'GA- +5 46 5??5&-'2 ?51$':5 '& -A5 D2??2G5 46 -A5 1'$51

& 41F51 -4 5665:- -A'?(-A5 21M*'? 46 2&-*2 D15D215F -4 -A14@ 2 +1'FG5 2:14??(2- 2 D4'&- &4- 621 614E 12,5--4 5 ?*::55F5F '& '-(&4-@'-AB ?-2&F'&G -A5 ?@4 5& 2&F -14*+5F :4&F'-'4& 46 -A5 @2-51?(9 '& 2 65@ F2C?(*&F51 :4$51 46 -A5 21-' 51C(@A':A A5 A2F D 2&-5F 4& -A5 +2&H 46 -A5 1'$51(2&F @A':A 614E '-? G152-51 5 5$2-'4& 5&-'15 C :4E E 2&F5F -A5 4DD4?'-5 ?A415

A5 +1'FG5 @2? :4&?-1*:-5F 46 +42-? +5 4&G'&G -4

/#&$ +$? 0 $ $? - # " -$ #& $ > /
* ? # $ 0 # > U $ 0 #
$?$ +$, $ + V $> $L
&# # $ # ? + L
#O J## .' $ / # > #& ?
+ /#&# $ - - # + J- #&# > 6# $ $ #0 JJJ#
&$- ##
1 ?# / $&& /G# ?
6 $& C &?$ $& * ? 8$ #"L
#$? $ &# # # $? !' $&# $+ # V $ +# #O '# 4E .' $ / # G# ?
?$ * ## $ #& $

U # # , # * , #
#+ $'& +) J
) ('
"# $&# $ " +
+$ # " "# #-$ V
#&' #O'#'
/ / ? $+ J?#O# $ $
? - /$> ? $+ * $ /' $, #' $ - &' & 0 $ /
0> ? +$ - $L
$ &?$ $& ? G ' G$
>M&?$ " /' $? - # /
0 * ' # '& , &' * ? J$+ - /' ? $'# $ /' / L
$ # * ? $ + $ $#

' 6 ' 8 8 <S

-A5' 6 55-(' ?-14&G C' ?5: *15F' -4G5-A51' 2&F' :4$515F' @'-A'
D 2&H?' A5' @41H' +5'&G' :4 E D 5-5F(' 4&' -A5' -A' 46'
4$5 E +51(' -A5' 21 E C' 2F$2&:5F' *D4&' -A5' +1'FG5(' ?*DB
D41-5F' +C' ?*:A' 2' '$5 C' :2&&4&2F5' 614 E' -A5' +2--51'5?'
2 4&G' -A5' ?A415(' 2?' E 2F5' 2 ' 15?'?-2&:5' 4&' -A5' D21-'
4 6'-A5' D2&'21F?' '&56'5:-*2 ' A5' 'E D5-*4?'-C' @'-A'
@A':A' -A5' 15&:A' 1*?A5F' 641@21F' @2?' ?*:A' 2?' -4'
F1'$5' +2:H' -A5' 2F$2&:5F' G*21F' 46'-A5'1' 5&5 E C(' @A':A'
G'$'&G' @2C' '&' F'?41F51' 15-152-5F' 4&' -A5' E 2'&' +4FC'
56415' -A5' :4&6*?'4&' :4* F' 5J-5&F' 6*1-A51(' 4&.'
?2 $4(' E 4*&-5F' F' ' ; & '&' -A5' E 2&&51' 46'-A5' 'GA-'
:2$2 1C(' 14F5' -A14*GA' -A5'+14H5&' 12&H?(' 2&F(' 12 C'&G'
-A5' 6*G'-'$5?(' M*':H C' +14*GA-' -A5 E' -4' 41F51' 2B
$2114' 2&F' &F12F2(' 2-' -A5' ?2 E 5' -'E 5(' 5F' *D' -A5'
D2&'?A' '&62&-1C(' 2&F' -A5' @A4 5' :4 * E &' :A21G'&G'
6*1'4*? C' 2G2'&?-' -A5' 15&:A(' :4 E D5 5F' -A5 E' -4'
62 -51(' 2&F' 2-' 5&G-A' -4' 62 ' +2:H' 4&' -A5' +1'FG5

A5' ?-1*GG 5' &4@' +5:2 E 5' F5?D512-5' M 466':51?' 2&F'
?4 F'51?(' A41?5' 2&F' 644-(' E '&G '&G' -4G5-A51(' 2&F' 6'GA-B
'&G' A2&F' -4' A2&F(' @'-A' 2 ' -A5' 6514:'-C' H'&F 5F' +C'
:4?5' D51?4&2 ' :4 E +2-' 4 E 5' @515' -14FF5&' *&F51'
-A5' 655-' 46'-A5' :2$2 1C(' E 2&C' E 415' @515' 641:5F' 614 E'
-A5' +1'FG5(' 2&F' -A5' @2-51?' 46' -A5' 21'G '2&4' @515'
:4$515F' @'-A' E 5&' 2&F' A41?5?(' +41&5' F4@&' +C' -A5'
:*115&-(' 2&F' ?-1*GG '&G' '&' $2'&' -4' G2'&' -A5' ?A415' -'
@2?' 2' :4&-5?-' 46' E 515' +4F' C' ?-15&G-A' 2&F' :4*12G5('
'&' @A':A' ?H' ' 2&F' ?*D51'41' -2:-':?' @515' 46' '-- 5' 2$2' '
E 4&G' -A4?5' @A4' E 4?-' F'?-'&G*'?A5F' -A5 E ?5 $5?('
-A5' &2 E 5' 46' -A5' &4+ 5' -2 '2&' 2+1':'4' 4 4&&2' '?'
D21-':* 21 C' E 5&-'4&5F' &' A514':' 2:-'4&' '?' 15:41F5F

2 ?4 46 2 D51?4& 46 '&651'41 12&H(2J D2&'?A K&
41 ?-2&F21F +52151(&2E5F 5?:2? A5 1'GA- A2&F
46 -A'? E2& @2? ?A4- 2@2C +C 2 :2&&4&.+2 M 2? 2
:4E12F5 @2? 12'?'&G *D -A5 62 5& :4 4*1?(-A5 G2 2&-
5&?'G& 15?4 *-5 C G12?D5F -A5E(5J: 2'E'&G -A2- R A5
A2F 4&5 A2&F ?-' 5 56- K -A5 ?2E5 -'E5(E*66 '&G
2 ?:216 14*&F -A5 + 55F'&G ?-*ED(A5 -44H A'? D 2:5
'& -A5 12&H? 2? +56415 A'? +12$5 F55F F'F &4- G4
*&15@21F5F(2&F 2 '+512 D5&?'4& @2? ?5-- 5F 4&
A'E 2- 4&?2 $40? '&?-2&:5

1'&G -A5 A52- 46 -A5 E5U5 -A5 G&? 4& -A5
15&:A ?A415 A2F +55& 5&-'15 C ?' 5&-(2? -A5C :4* F
&4- +5 @41H5F @'-A4*- F4'&G 2? E*:A E'?:A'56 -4
-A5'1 4@& E5& 2? -A5 D2&'21F?(@'-A @A4E -A5C
@515 : 4?5 C E'&G 5F * - 2? -A5 15&:A G12F*2 C
15:4' 5F +56415 -A5'1 'ED5-*4*? 2F$51?21'5?(615?A
+4F'5? 46 -A5 2--51 1*?A'&G 641@21F -4 ?*DD41- -A5'1
2F$2&:5(&5:5??21' C 5JD4?5F 2 :4&?'F512+ 5 5&G-A
46 :4 *E& -4 -A5 12&G5 46 -A5 15&:A G*&?(@A':A
4D5&5F 2 G2 '&G 6'15 4& -A5 6*1-A51 5J-15E'-C 46
-A5 +1'FG5 A5 D2&'21F?(&4-@'-A?-2&F'&G -A5C
-A15@ -A5E?5 $5? '&-4 -A5 62:5 46 -A5 :2&&4&(K 2?
-A5 21M*'? 46 2&-*2 5J: 2'E5F(R @'-A 2? E*:A
!&:4&:51& 2? '6 -A5'1 +4F'5? A2F +55& E2F5 46 2'1
'&?-52F 46 6 5?A 2&F + 44F(K 64*&F -A5E?5 $5? ?4 E*:A
F'?-15??5F +C -A'? -511'+ 5 6'15(-A2- -A5C @515 :4EB
D5 5F -4 62 +2:H M 2&F -A5 $2&(-A*? 56- @'-A4*-
?*DD41-(2- 5&G-A 15-152-5F '& -*1&(2+2&F4&'&G -A5
+1'FG5 -4 -A5 5&5EC 9

I $ F5 $ $&# & - '& JJJ'### A 0$ &$ 5C5?

A'?' 2:-'4&' @2?' 4&5' 46' -A5' ?5$515?-' @A':A' 4::*1B 15F' '&' -A5?5' @21?' 4&' *G4' F5' 4&:2F2(' -A5' $5B -512&' 46' *' 2' 6'GA-' +C' 2&F' 2&F' ?52(' -4 F' 24 4' '4$'4(' -A2-' R'A5' A2F' &5$51' 65 -' A'E?5 6''&' ?*:A' 'E B E'&5&-' D51'' '&' 2&C' 46' A'?' +2-- 5?' 2?' '&' -A'?K9' A5' 15&:A(' &4-@'-A?-2&F'&G' -A5C' 15E2'&5F' E2?-51?' 46'-A5' :4&-5?-5F' +1'FG5(' A2F' E5-' @'-A' 2' 15?'?-2&:5' @A':A' G152- C' F'?:4*12G5F' -A5E' M' 2&F(' '&?-52F' 46' 2-B -5ED-'&G' -4' D*?A' -A5'1' ?*::5??' 6*1-A51(' 15-'15F' -A2-' ?2E5' 5$5&'&G' -4' -A5'1' M*21-51?' 4&' -A5' 4-A51' ?'F5' 46' -A5' 1'$51' A5' -5ED5?-*4*?' @52-A51(' @A':A' :4&B -'&*5F' @'-A' *&2+2-5F' 6*1C(' A2F' &4@' +14H5&' *D' -A5' 142F?(' 2&F' :4&$51-5F' -A5' ?4'' '&-4' 2' E412??(' @A':A' @2?' &521 C' 'ED12:-':2+ 5'641' -A5' E4$5E5&-?' 46'A41?5(' 2&F' M*'-5' ?4' 641' -A4?5' 46' -A5' 21-' 51C(' 4&' @A':A' -A5' 15&:A' :A'56 C' 15 '5F' M' @A' 5' '-' '&-51D4?5F' :4ED212B -'$5 C' ? 'GA-' 4+?-2: 5?' -4' -A5' E2&45*$15?' 46' '&62&-1C(' @A':A' :4&?-'-*-5F' -A5' ?-15&G-A' 46' -A5' D2&'21F?' 14E' 2' :4&?'F512-'4&' 46' -A5?5' :'1:*E?-2&:5?(' -A5' 15&:A' :4EE2&F51' 15?4 $5F' &4-' -4' 15?*E5' 2:-'$5' 4D512-'4&?' -' ' 2' :A2&G5' 46' @52-A51(' +C' 15?-41'&G' -A5' 142F?(' ?A4* F' 5&2+ 5' A'E' -4' F4' ?4' @'-A' 2F$2&B -2G5' 52&@A' 5' A5' :4&?-1*:-5F' 2' 15F4*+-' 4&' -A5' D2&'?A' 5J-15E'-C' 46' -A5' +1'FG5(' 2&F'-A15@' 2' +4FC

/' $" ' +'##' Q >' JJJ' 24 A 2) A ? #&$' / ' 8 ' &$-'J#' A 8$ #0$>' 6# ' / ' =' $-' 0'##' &$-'&'#'A'8$+# ' -$ $' +'##' #0' J#J' & J'# A' 6# ' / ' $ & ' +'''--' $ > ' - ' -' -'&& J#J A' ((E' ((2 ' P '## :# ' * ' - A FB(' A' $' $ ' :' * ' FF' A' I ' P '## :# ' 222' :# ' $&?#$' #' "$K' ' $' +$' * ' FB(' J#' '' 2E A 2B' '

46 -144D? '&-4 '-('& 41F51 -4 :4 E E 2&F -A5 D2??(@A5&5$51 A5 ?A4* F +5 F'?D4?5F -4 *?5 '- 9

A' 5 -A5 A4?-' 5 21E'5? -A*?' 2C 62:'&G 52:A 4-A51(-A5 5C5? 46 2 -2 C @515 -*1&5F -4 -A5 E('& 2&J'4*? 5JD5:-2-'4& 46 2 +2-- 5(@A':A ?A4* F 6'&2 C F5:'F5 -A5 62-5 46 2D 5? JD15??5? @515 F2' C F5?D2-:A5F 614 E -A5 15&:A :2 E D -4 4 E 5(@A5&:5 -A5 E'&'?-51? 46 -A5 F'66515&- *14D52& D4@51? -12&?E'--5F -A5 -'F'&G? -4. -A5'1 15?D5:-'$5 G4$51&B E 5&-? 2:A'2$5 " 15D15?5&-5F 2- -A2- -'E 5 -A5 415&-'&5 15D*+ ': 2- -A5 D2D2 :4*1-(2&F A'? :41U 15?D4&F5&:5 -55E? @'-A 2? E 2&C 6 42-'&G 1*E4*1? 2&F ?D5:* 2-'4&? 2? 2 E 4F5E G2L5--5 A515 @515 E 2&C 15&:A 15?'F5&-? '& -A5 :'-C @'-A @A4E -A5 E'&'?-51 @2? D51?4&2 C 2:M*2'&-5F 5 615M*5&- C &4-':5? -A5'1 4D'&'4&? 4& -A5 D14G15?? 46 -A5 @21(@A':A -A5C 15G21F5F @'-A -A5 E4?- ?2&G*'&5 :4&B 6'F5&:5(2? ?*15 -4 15?* - '& -A5 -1'*EDA 46 -A5'1 4@& 21E?(@A5& 4&:5 62'1 C +14*GA- '&-4 :4 '?'4& @'-A -A5 5&5EC A5 :2 E51 2&F E415 D5&5-12-'&G 5C5 46 -A5 415&-'&5 F'?:51&? ?CED-4E? '& -A5 :4&B F'-'4& 46 -A5 -@4 21E'5? 46 M*'-5 2 F'66515&- -5&. F5&:C 6

I 8 #&&#$ /# # ##$ #0 '# --4F) 4F3 A P '## :# * FEF A $&?#$' # "$K $ +$ JJ#J A 8$+# + ' -- // A //

"$K# # #+$ $ +$ #J H J'### A5 15&:A ?A4@5F -A5 ?2E5

& *#/ & *#= + ? 0 "# # " *? ### ? *? $ $L # ?$'# " / $ K ? $ #$ +## $:#& ?$? $?$ / $ = + # $#/ U 6 G /"#' FE EEE / &$ #*? & /+ 8 $ ' / / '$ # ? - $# * :# 0 ? -$ #L $ / +$ > -# / U +

-' ?55 E 5F' &4@' 4+$'4*?' -A2-' $':-41C' E *?-' F5: 215' 641' -A2-' D21-C' @A':A' :4* F' +5?-' 5&F*15' -A5' A21F?A'D?' 2&F' D1'$2-'4&?' 46' '-?' D15?5&-' ?'-*2-'4&' A5' 4:2' D4?'-'4&' 46' -A5' D2&'21F?' @2?' 621' E 415' *&62$4*12+ 5' -A2&' -A2-' 46' -A5' 5&5 E C' A5' 152-' 2D-2'&(?44&' "26-51' -A5' 2662'1' 46' -A5' +1'FG5(A2F' F12@&' 466' A'?' 641:5?' -4' 2' 1'?'&G' G14*&F' 2+4*-' 2' E ' 5' 614 E' -A5' 1'$51(@A':A' @2?' :14@&5F' +C' -A5' '-- 5' A2 E 5-' 46' '&-*12(2&F' :4 E E 2&F5F' -A5' 14*-5' -4' 2D 5?' &' 614&-' 46' A'?' :2 E D' A5' ?*&H' 2' F55D' -15&:A(@A':A('&' -A5' ?2-*B 12-5F' ?4' (?D55F' C' 6' 5F' @'-A' @2-51M' 2&F' A5' G21B &'?A5F' '-' 2-' 52:A' 5J-15 E '-C' @'-A' 2' ?-14&G' 15F4*+-' A*?' ?5:*15 C' '&-15&:A5F(A5' 15?4 $5F' D2-'5&- C' -4' 2@2'-' -A5' E 4$5 E 5&-?' 46' -A5' 5&5 E C

A5' ?'-*2-'4&' 46' -A5' 21 E C('&' -A5' E 52&' -' E 5(@2?' '&F55F' F5D 412+ 5' A4?5' @A4' 4::*D'5F' -A5' 4@51' 5$5' @515' *D' -4' -A5'1' H&55?' '&' E * F' 2&F' @2-51(641' -A5' 5J:5??'$5' 12'&?(2&F' -A5' '&*&F2-'4&' 46' -A5' 21'G.' '2&4(A2F' :4&$51-5F' -A5' @A4 5' :4*&-1C' '&-4' 2U E 515' M*2G E '15(41' 12-A51' ?-2&F'&G' D44 ' A5' 4& C' @2C' '&' @A':A' -A5' E 5&' :4* F' ?5:*15' -A5 E ?5 $5?' @2?' +C' :4$51'&G' -A5' 521-A' 2?' 621' 2?' D4??'+ 5' @'-A' +4*GA?' 2&F' +*&F 5?' 46' -@'G?(2&F' '-' @2?' 2 -4G5-A51' *&:51-2'&' A4@' 4&G' 5$5&' -A'?' 5JD5F'5&-' @4* F' ?51$5' 2G2'&?-' -A5' 5&:142:A'&G' 5 5 E 5&-' A4?5' 4&' -A5' A'GA51' G14*&F?' @515' ?:21:5 C' '&' +5--51' D 'GA-' A5' F1'$'&G' ?-41 E ?' 46' ? 55-' 2&F' 12'&(@A':A' A2F' :4&-'&*5F' 641' ?5$512' @55H?' @'-A4*-' '&-51 E '??'4&(64*&F' -A5'1' @2C

G /' ?$' '"#' ' G#&' $' + &?' $V' 9 # $' $' / ' $"' ' ?$' ' + ' ?#+' $' #"=' +' ' #0' ' &' JJJ'#

< ; 6 6

'&-4 5$51C :15$':5 46 -A5 6 'E?C -5&-? 2&F :12LC A4$5 ?(-A2-:A5F4& C @'-A +12&:A5? 46-155?(@A':A 26'+1F5F 2 -5ED4121C ?A5 -51 -4 -A5 -144D? &Q2FB F'-'4&-4 -A5?5 5$' ?(-A5 ?4 F'51? @515 +2F C65F(614E -A5 F'66':*-C 46 6'&F'&G 15?4*1:5? '& -A5 @2?-5 2&F F5D4D*2-5F 15G'4&? '& @A':A -A5C @515 M*21-515F(9 2&F +2F C D2'F(614E -A5 &5G 'G5&:5(41 12-A51 D4.9 $51-C(46 T'&G 51F'&2&F(@A4?5 '&2F5M*2-5 15E'-B -2&:5? -4 A'? G5&512 5JD4?5F -A5 2--51(2E4&G E2&C 4-A51 5E+2112??E5&-?(-4 -A5 'E E'&5&- A2L21F 46 F'?2665:-'4& 2E4&G -A5?4 F'51C(5?D5:'2 C -A5 6415'G& E51:5&21'5?(@A':A &4-A'&G('&F55F(+*- -A5 E4?- F5 ':2-5 2&F,*F':'4*? :4&F*:- 4& A'? D21- :4* F A2$5 2$51-5F 6

& -A'? F'66':* - :1'?'?(4&?2 $4 F5 41F4$2 15-2'&B 5F 2 A'? *?*2 5M*2&'E'-C(2&F 5$5& -A5 :A5516* B &5?? ?4 '&F'?D5&?2+ 5 '& 2 52F51 @A4 @4* F '&6*?5 A521- '&-4 A'? 64 4@51? 5 5&-515F 6155 C '&-4 -A5 F'?-15??5? 2&F D51?4&2 655 '&G? 46 A'? E5&(2&F('&B ?-52F 46 2??*E'&G 2&C 5J5ED-'4& 614E 62-'G*5 41 ?*6651'&G 4& -A5 ?:415 46 A'? 4@& 12&H(-44H A'? -*1& '& -A5 A*E+5?- -4*1 46 F*-C @'-A -A5 E52&5?- 46

I ?# 0$ $& *# L ?$0# /'& >+ '?$' 0 *' >' #+# /' J < * '#' $>'#' ?' $+-$ #$ #J'#' ?' #"?0 ? /' *' ?'& #L '$ /'-$# ' *' $' ?' $ - #&$ '+ $# ' $ /' $ +#$' *# / A $+ ' G?#&?' &$ ' - $ &#$ # ' ?$' + ' #' ' G?# '" /'- >'$ /'" /' G# ' ?$ '0 '? /'#' ? ' $ #$ $' 6# ' / ' -$ $' +' ## '#0 'JJ'###'&' ' A 8 #&L

&#$ /# #' ' /($ #$' +' #' #0' '#' -' 3F3' A' $&?#$' #' "$K# ' #+$'$ +$' ' J#' A $' :#$ /# $ ' :' * ' FF A ? ' / ' 8 $ ' $-#- $ ' &$-'&'##'&'### A ?' $L - #$'& , '#*'G# '0' L + +0 /'G ' / $D ' JL & #' >'* ' ?'& G ' *' $L " ' ?' ' ' *'G?#&?' G ' *$' + ' #+# /' ?$' ? ' *' $ #

-A5 E (' E 4 * &-'&G' G * 21F' A ' E ?5 6(' '-' '?' ?2'F(' 4&' E 415'
-A2&' 4&5' 4 : : 2?'4&' +4$5' 2 (' A5' F'?D 2C5F' -A2-' '&B
6 5J'+ 5' : 4&?-2&: C' @A' : A' 5&2+ 5?' -A5' ?-14&G' E '&F' '&'
-A5' A4 * 1' 46' F21H&5??' 2&F' D51' ' -4' + * 4C' * D' -A5' ?'&HB
'&G' ?D'1'-?' 214 * &F' A ' E ' ' 15 E 21H2+ 5' '&?-2&: 5' 46'
-A'?' 6' J5F&5??' 46' D * 1D4?5' 4 : : * 115F' 2-' -A'?' -' E 5

A5' 641 41&' : 4&F'-'4&' 46'-A5' 21 E C(' 2&F' -A5' '&F56'B
&'-5' D14?D5 : -' 46' '-?' : 4&-'&*2&: 5(' 12'?5F' 2' &2-*12 ' 2DB
D15A5&?'4&' '&' E 2&C' 46' -A5' 46 :51?' -A2-(' '6' '-' F'F' &4-'
D14$4H5' ?4 E 5' 4D5&' 2 : -' 46' E * -'&C(' '-' @4 * F' '&' 2 '
D14+2+' '-C' +152H' F4@&' -A5' ?D'1'-?' 2&F' : 4&?-'-*-'4&' 46'
-A5' ?4 F'51?' 5$512 ' 46'-A5 E (' -A5156415(> 2 E 4&G' -A5'
15?-(' 5&F4L2' 2&F' -A5' -@4' 4 4&&2?(> @2'-5F' 4&' -A5'
: 4 E E 2&F51.'&. : A'56(' 2&F(' 26-51' ?-2-'&G' -A5'1' 6521?'
@'-A4 * -' 15?51$5(' +5?4 * GA-' A ' E' -4' 15 E 4$5' -A5' : 2 E D'
-4' 2D * 2(' @A515' -A5' -144D?' E 'GA-' 6'&F' A52 -AC' 2&F'
: 4 E E 4F'4 * ?' M * 21-51?(' 2-' 52?-' * &-' ' -A5' ?5$51'-C' 46'
-A5' ?52?4&' @2?' E '-'G2-5F' N' +56415' @A' : A(' -A5C' '&?'?-B
5F(' -A515' @2?' &4' 152?4&' -4' 2&-' : 'D2-5' 2&C' E 4$5 E 5&-'
4&' -A5' D21-' 46' -A5' 15&: A ' * -' 4&?2 $4' 65 -' -44'
F55D C' -A5' ' E D41-2&: 5' 46' G12DD '&G' @'-A' -A5' 5&5 E C('
+56415' -A5C' ?A4 * F' G2'&' -A5' 4D5&' : 4 * &-1C(' -4' +5' @' B
'&G' -4' -1 * ?-' -4' 2&C' ?* : A' D15 : 21'4 * ?' : 4&-'&G5&: C ' 5B
?'F5?(' A5' F'?-1 * ?-5F' -A5' 5665 : -' 46' ?* : A' 2' 15-14G12F5'
E 4$5 E 5&-' 4&' -A5' ?D'1'-?' 46' A'?' 4@&' -144D?' ' 5' A2F'
F5 : 'F5F' 4&' A'?' : 4 * 1?5' 26-51' -A5' E 4?-' E 2-*15' F5 '+5B
12-'4&(' 2&F(' A2$'&G' D2-'5&- C' A521F' A'?' 466' : 51?' -4' -A5'
5&F(' 15D '5F' '&' -A5?5' 65@' + * -' E 5 E 412+ 5' @ 41 F?% R' -'
'?' '&F'?D5&?2+ 5' -4' -A5' D * + ' :' ?51$' : 5' -4' E 2'&-2'&' 4 * 1

: ' 4

< = 6 6

D15?5&- D4?'-'4&N 2&F(+5 2??*15F(@4* F ?44&51
E21:A641@21F -@4 ?-5D?(-A4*GA '- ?A4* F +1'&G E5
-4 E C G12$5(-A2& 62 +2:H 4&5 -4 G2'& 2 A*&F15F
C521? K A5 F5:'F5F -4&5 46 -A5 15D C 15 '5$5F A'E
614E 6*1-A51 'E D41-*&'-C 9

A515 '? &4 2:- 46 4&?2 $40? '65 @A':A(4& -A5
@A4 5(F'?D 2C? E415 ?-1'H'&G C -A5 ?-15&G-A 46 A'?
:A212:-51 A5& -A*? @'-&5??'&G A'? 62'-A6* 64 B
4@51? F144D'&G 2&F FC'&G 214*&F A'E(@'-A -A5 :4&B
?:'4*?&5?? -A2- 2 @41F :4* F 15 '5$5 -A5E 614E 2
-A5'1 F'?-15??5?(A5 C5- 15612'&5F 614E *--51'&G '-('&
?-51& 4+5F'5&:5 -4 @A2- A5 15G21F5F 2? -A5 :2 46
F*-CN 2&F -A'? -44(4& A'? 4@& 15?D4&?'+' '-C('& 4DB
D4?'-'4& -4 -A5 15E4&?-12&:5? 46 -A4?5 4& @A4?5 ,*FGB
E5&- A5 E4?- 15 '5F

4&?2 $4 :4&6'F5F '& -A5 D1*F5&:5(?4+1'5-C(2&F
5J:5 5&- :4&?-'-*-'4& 46 -A5 D2&'21F?(641 15?'?-'&G
-A5 +2F 5665:-? 46 -A5 : 'E2-5 5 15 '5F -44 4& -A5'1
-1'5F F'?:'D '&5(2&F -A5'1 F5$4-'4& -4 A'E?5 6(641 :21B
1C'&G -A5E -A14*GA 2&C ?2:1'6':5 A5 ?A4* F F5E2&F
46 -A5E '? 5JD51'5&:5 2- 21 5-2 5F A'E -4 2&B
-':'D2-5 15?* -? 46 2 $51C 4DD4?'-5 :A212:-51 @'-A -A5
15&:A -144D? A5 5$5&- ,*?-'6'5F A'? :4&: *?'4&?
'& +4-A 15?D5:-?

A5 15&:A(2? 2 152FC &4-':5F(4::*D'5F A'GA51
2&F E415 A52 -AC G14*&F(4& -A5 4-A51 ?'F5 46 -A5

$ / K 6# & J#J' &$- J'# A 8 #&&#$ /# #' & JJJ'### A' ? #&$ / 8 $ #$ #0 '# -4F3 A L ? $- #0 '## &$- '&'### A 8$ #0$> # $ + ' ' #0 ' ' &$- '### 6# / -$##$ + '## #0

21'G '2&4(' -A2&' -A5'1' 1'$2 ?' A5C' @515' 641-*&2-5' 5&4*GA' 2 ?4' -4' 6'&F' E415' 5665:-*2' D14-5:-'4&' 614E' -A5' @52-A51' '&' -A5' 15E2'&?' 46' 2' ?D2:'4*?' 2EDA'-A52B -15(' 2&F' ?4E5' 4-A51' 5F'6':5?(' @A':A' ?-' ' :4$515F' -A5' ?'-5' 46' '&-*1&25' '-A' 2 ' -A'?(' A4@5$51(' -A5C' ?*6B 6515F' E415' ?5$515 C' 614E' -A5' '&: 5E5&-' ?52?4&' -A2&' -A5'1' 14+*?-' 2F$51?21'5?' *E+51?' F2' C' ?':H5&5F' 2&F' F'5F' A5C' @515' E*:A' ?-12'-5&5F(' E4154$51(' 614E' @2&-' 46' D14$'?'4&?(' -A14*GA' -A5' H&2$'?A' D5:*B 2-'4&?' 46' -A5' :4EE'??21'5?' @A4' A2F' :A21G5' 46' -A5' E2G2L'&5?' '&' 4E5' A*?' ?'-*2-5F(' -A5' 6'51C' ?D'1'-?' 46' -A5' 15&:A' ?4 F'51C(' 52G51' 641' D14ED-' 2&F' F5:'?'$5' 2:-'4&(' +*-' 'ED2-'5&-' 46' F5 2C(' G12F*2 C' ?*&H' *&F51' -A5' 4&G' D14-12:-5F' E'?51'5?' 46' 2' @21' @A515' -A5' 5 5B E5&-?' @515 -A5' D1'&:'D2' 5&5EC(' 2&F' @A515' -A5C' ?2@' -A5E?5 $5?' G12F*2 C' E5 -'&G' 2@2C' 'H5' ? 2$5?' '&' 2' D1'?4&' ?A'D(' @'-A4*-' -A5' :A2&:5' 5$5&' 46' @'&&'&G' 2&' A4&4*12+ 5' F52-A' 4&' -A5' 6'5 F' 46' +2-- 5 9

A5' F'?:4&-5&-' 4::2?'4&5F' +C' -A5?5' :'1:*E?-2&:5?' @2?' 6*1-A51' ?@5 5F' +C' -A5' 'ED5165:-' ?*::5??' @A':A' A2F' 2--5&F5F' -A5'1' 5664 1-?(' @A5&' 2 4@5F' -4' E52?*15' @52D4&?' @'-A' -A5' 5&5EC

-' 5&G-A' -A5' 2-5&-' E2??' 46' F'2665:-'4&' 64*&F' 2&' 4+,5:-' 4&' @A':A' -4' $5&-' '-?5 6' '&' -A5' D51?4&' 46' -A5'1' :4EE2&F51.'&.:A'56' -A5' 21M*'?' 46' 2&-*2(' &5$51' D4D* 21' @'-A' -A5' 15&:A' ?4 F'51?' A5C' &4@' 4*F C

1' 'P '##':#$' $"'8 ' #$#'*'3M A *'/' $' *' FB@A 8$+# ' +' '-' * 'FF A :$# $ 6#3 /' #' ((@A 9 #$' $ ' +' '' H ' +'#'--'(E2'(EF' #0':' &$-' #J' A' $&& #

-2J5F A'E @'-A 'E+5:' '-C(2::*?5F A'E 46 2 ?5:15- *&F51?-2&F'&G @'-A -A5 5&5EC(2&F 42F5F A'E @'-A -A5 4DD14+1'4*? 5D'-A5-? @'-A @A':A 12&?B 2 D'&5 '&?4 5&:5 @2? 2::*?-4E5F -4 ?-'GE2-'L5 -A5 -2 '2&? & 2 -A'?(-A5C @515 ?5:15- C ?*DD41-5F +C $5? F0 UG15(2&F1':4*1-(2&F 4-A51 15&:A 466':51?(@A4 A2F 2 @2C? 15G21F5F @'-A F'??2-'?B 62:-'4& -A5 5 5$2-'4& 46 -A5 -2 '2& G5&512 M -' 2- 5&G-A -A5 2--51(6'&F'&G A5 A2F '&6 *5&:5 &5'-A51 @'-A 466':51? &41 ?4 F'51?(2&F *&@' '&G -4 15-2'& :4EE2&F @A515 A5 A2F 4?- 2*-A41'-C(2$2' 5F A'E?5 6 46 2 -5ED4121C ' &5??(*&F51 @A':A A5 @2? 2+4*1'&G(-4 -A14@ *D A'? :4EE'??'4&(2&F @'-AB F15@ 2+1*D- C -4 A'? 4@& U?-2-5?

5 @2? ?*::55F5F +C -A5 21M*'? 46 2 *LL4(2& -2 '2& '&F55F +C +'1-A(+5'&G 2 &2-'$5 46 '5FB E4&-(+*- @A4 A2F 4&G ?51$5F *&F51 -A5 15&:A +2&&51?(@A515 A5 A2F +55& '&-1*?-5F +C 4*'? Z @'-A $51C 'ED41-2&- :4EE2&F? 5 @2? &4- F56'B :'5&- '& 5&51GC 46 :A212:-51(41 E' '-21C ?:'5&:5M +*- '- 15M*'15F D4@51? 46 2 A'GA51 41F51 -A2& A'? -4 +1'&G -A5 21EC *&F51 ?*+41F'&2-'4&(2&F 15&5@ '-? :4&6'F5&:5 *&F51 D15?5&- :'1:*E?-2&:5? A5 -2 'B 2&?(F'?G*?-5F @'-A -A5 -152-E5&- 46 -A5'1 2&:'5&- :A'56(F5?51-5F '& G152- &*E+51? A5 G152- +4FC 46 -A5 15&:A :A'$2 1C('ED2-'5&- 46 -A5'1 D15?5&- *&A52 -AC D4?'-'4&(F'?D51?5F 2E4&G -A5 2F,2:5&- :'-'5? 46 4&F'(-1'(2&F 25-2(52$'&G -A5 4@ :4*&-1C 214*&F -A5 -4@51 46 -T5 21'G '2&4 -4 -A5

:215' 46' -A5' @'??' 2&F' 51E2&' '&62&-1C' A*?(' @A' 5' -A5' @A4 5' D2&'?A' 21EC' 2C' @'-A'&' 2' E' 5' 46' -A5' 1'$51(' *&F51' -A5' 'EE5F'2-5' 5C5' 46' -A5'1' :4EB E2&F51(' D15D215F' 641' '&?-2&-' ?51$':5(' -A5' 15&:A' @515' ?:2--515F' 4$51' 2' :4*&-1C' E415' -A2&' -5&' E' 5?' '&' 5J-5&-(' @A515(' @'-A4*-' 15G21F' -4' E' '-21C' F'?:'B D '&5(' -A5C' ?4*GA-' -4' 15 '5$5' -A5' F1521C' E4&4-4&C' 46' 2' :2ED' +C' 2 ' -A5' 15 2J2-'4&?' @A':A' ?*:A' :4EB 641-2+ 5' M*21-51?' :4* F' 26641F 9

-' E*?-' &4-' +5' ?*DD4?5F' -A2-' -A5' 15D4?5' 46' -A5' -@4' 21E'5?' @2?' &5$51' +14H5&' +C' -A5' ?4*&F?' 46' @21' 415' -A2&' 4&5' 15&:4&-15(' 4&' -A5' :4&-121C(' @'-A' $2B 1'4*?' 641-*&5(' -44H' D 2:5(' 2&F' E415' -A2&' 4&5' F'?D 2C' 46' D51?4&2' D14@5??' +C' -A5' H&'GA-?' 46' -A5' -@4' &2B -'4&?(' 2?' 641E51 C' 2-' -A5' ?'5G5' 46' 21 5-2' A5' D2&'21F?' E2F5' -@4' *&?*::5??6*' 5664 1-?' -4' +*1&' -A5' 5&5EC0?' +1'FG5%' +*-' -A5C' ?*::55F5F(' 4&' -A5' 4-A51' '2&F(' '&' :211C'&G' -A5' ?-14&G' 641-15??' 46' 4::2' *G '.' 5 E2(' G211'?4&5F' +C' -A5' 15&:A' E4&G' -A5' 652-?' 46' '&F'$'F*2' A514'?E(' -A5' 2?-' '2&' @1'-51?' 5JD2B -'2-5' E4?-' :4ED 2:5&- C' 4&' -A2-' 46' -A5'1' 62$4*1'-5' :2$2 '51' '5G4' F5' 215F5?(' @A4' F5?:5&F5F' 2 4&5' 4&' -A5' +1'FG5' 2G2'&?-' 2' +4FC' 46' 15&:A' H&'GA-?(' 2 ' 21E5F' '&' D1446(' @'-A' 2' F5?D512-5' A21F'A44F' @41-AC' 46' 4&' b*'J4-5%' 2&F' @4* F' E4?-' D14+2+ C' A2$5' ?A215F' -A5' *?*2' 62-5' 46' -A2-' 15&4@&5F' D51?4&2G5

I' 8$+# ' 6# ' / ' $ & ' A $&?#$' #' "$K# ' #+$' +' :' --' ((EA ((4 A 'P -' $' +$' 'J#'=M '8 $# ' '## :# '* 'FB('FB@ A 8 #&-' 6# ' / ' #' H ' --' 2)4' &#$ /# #' +'#' #0' '#' -' 4F5' 2)(

< S 6 6

4& ?*:A 4::2?'4&?(A2F A5 &4- +55& 15?:*5F +C 2 ?2 C 46 A'? 4@1 :4*&-1CE5& A5 15&:A 6'&F 2 :4*&-51D21- -4 -A'? 2F$5&-*15 '& -A2- 46 -A5 ')M + 2C21F(@A4 @'-A A'? ?'&G 5 21E E2'&-2'&B 5F -A5 +211'51? 46 -A5 +1'FG5 2G2'&?- -@4 A*&F15F D2&'21F? 641 2& A4*1 41 E415 9

:A 652-?('&F55F(215 E415 52?' C 2:A'5$5F @'-A -A5 D5& -A2& -A5 ?@41F - -@4 F +5 '&,*?-':5(A4@B 5$51(-4 -A5 A4&5?- :A14&': 51 46 -A5 F2C -4 ?*DD4?5 -A2- A5 F'F &4- A'E?5 66* C

U # ' ? +$"#& G / ?$?? "V

$51C A521- :4&65??5F -A5 '&6 *5&:5 46 2 14E2&-':2G5(> -A5 FC'&G 2G5('&F55F(46 :A'$2 1C(> +*- @A5&(@'-A ?*D51'41 156'&5E5&-('- A2F 4?- &4-A'&G 46 -A5 5&-A*?'2?E 2&F 5J2 -2-'4& 46 '-? D1'E5 ?A2F4@C -@' 'GA- 46 14E2&:5 5&$5 4D5F 5$51C 4+,5:- $51C F2C G2$5 +'1-A -4 ?*:A 5J-12$2G2&:5?(&4- E515 C 46 ?5&-'E5&- +*- 46 2:-'4&(2? E2F5 '- F'66':* - -4 F'?B :51& -A5 D15:'?5 +4*&F21'5? 46 62:- 2&F 6':-'4& A5 :A14&': 51 E'GA- '&&4:5&- C 5&:142:A ?4E5-'E5? 4& -A5 D14$'&:5 46 -A5 D45-(2&F -A5 D45- 4::2?'4&2 C F12@ -A5 -A5E5 46 A'? $'?'4&? 6'0412 -A5 D2G5? 46 -A5 :A14&': 51 *:A '& 62:- @2? -A5 :2?5M 2&F -A5 14B E2&-': *?5 46 -2 C(-A5&:4E'&G641-A '& A51 G 41C(F'F '-- 5 E415 -A2& G'$5 2 +1'GA-51 6 *?A 46 :4 4*1

1 ? #&$ / 8 $ $-#- ; # $ $:#/$ / -$ $ #0'## &$-'&'# A + / + #' --' F33A F5E A $>$ / &?' JJ'' $- / $&?#$' #' "$K# #+$$ + + 'H: A :$# $ 6# P +$ JJJ#J J#' / # H + #' - (2)ZZ

-4' -A5' :A'E512?' 46'152 ' '65 ' A5' :A212:-51?' 46' '$'&G' A5145?(' 2' 2C21F(' 2' 215F5?(' 2&F' 2' 2' 2 ':5(' 152F'B C' ?*DD '5F' A51' @'-A' -A5' 5 5E5&-?' 46'-A4?5' 'F52 ' :4EB +'&2-'4&?' '&' @A':A' ?A5' A2?' ?4' G12:56* C' 5E+4F'5F' -A5' D5165:-'4&?' 46':A'$2 1C 9

1' +-$ ' ?'- ' +$ & ' >$' 0# " $-? ' *' ?' 8 $' *' ' *' ?' U' >$' '#=' $- $# ' G# ?' ?' - #& ' *' R' *' $>$ /'$ /' ?' ' # ' +#'$ /' ?' #D

$" $ #+$' + K " $% ', $ /' '#' ' ' #? '&?' #- $'$' '- - '_R

‘ Z

‘ 7 A ‘ ‘ 6 ‘ 8 8 A ‘
7 6‘ A 8 : ‘ ‘ ‘

< (‘ < =

* ‘ @55H?‘ A2F‘ &4@‘ 5 2D?5F‘ ?'&:5‘ -A5‘ -@4‘ 21E'5?‘ A2F‘ 2'&‘ '&‘ ?'GA-‘ 46‘ 52:A‘ 4-A51‘@'-A4*-‘ 2&C‘ F5:'F5F‘ E4$5E5&-‘ 4&‘ 5'-A51‘?'F5‘ *1'&G‘-A'?‘ -'E5‘ -A5‘ 152-‘ 2D-2'&‘ A2F‘ E2F5‘ 15D52-5F‘ 56641-?‘ -4‘ ?-15&G-A5&‘ A'E?5 6(‘ -A14*GA‘ -A5‘ '&-51$5&-'4&‘ 46‘-A5‘ D2&'?A‘ 2E+2??2F41‘ 12&:'?:4‘ F5‘ 4,2?(9‘ +C‘ 15'&B 641:5E5&-?‘ 614E‘ 4E5‘ '?‘ &5G4-'2-'4&?‘ @515‘ :A'56 C‘ F'15:-5F‘ -4‘ ?5:*15‘-A5‘2 '2&:5‘ 46‘-A5‘ 1?'&'(‘ 2‘ D4@516*‘ 62E' C(‘ 4&G‘ '&$4 $5F‘ '&‘ 2‘ +'--51‘ 65*F‘ @'-A‘-A5‘ 4 4&&2?(‘-A5&‘ '&‘-A5‘ D2&'?A‘ ?51$':5‘ ‘ 15:4&:' '2-'4&‘ +5-@55&‘ -A5?5‘ &4+ 5‘ A4*?5?‘ @2?‘ 2-‘ 5&G-A‘A2DD' C‘5665:-5F(‘ 2&F‘ 21-A4 4E54‘F0 $'2&4(‘ -A5‘ A52F‘46‘-A5‘ 1?'&'(‘ 2G155F‘-4‘5& '?-‘ *&F51‘-A5

I‘ 6 ‘ && / /‘8$ & $ ‘ / ‘ # $" ‘ >‘ +0 ‘ $/ ‘ - ‘ $‘ : "$‘$‘ ?‘& ‘ *‘Q + ‘ '$ ‘ 0 ‘ >‘ '$# ‘ '# / ‘ $> ‘# ‘ * & ‘ ‘ ? ‘ +## =& + ‘ / ‘ +0 ‘ / ‘ # # ‘ ? ‘ *‘ !$ ‘ U‘ ‘ !$ V‘ ; # & $" $ ‘ ‘ /$ ‘ $ ‘?# #$‘/ ‘ -$##$ ‘ $ ‘2‘, # &‘F‘ /#$ ‘3 ‘?$ $ ‘ $ ‘ 0 ‘ / ‘

D2&'?A' :4E E2&F51' @'-A' ' E5&' A'?' 2112&G5B E5&-' @2?' 6'&2 C' +14*GA-' 2+4*-' -A14*GA' -A5' G44F' 466':5?' 46' -A5' 5&5-'2&' E'&'?-51' 2-' 4E5(' @A4' 5$5&' 2F$2&:5F' 2' :4&?'F512+ 5' ?*E' 46' E4&5C' -4@21F?' -A5' D2CE5&-' 46'-A5' &5@' 5$'5? 9

A5' 2DD5212&:5' 46' -A'?' :41D?(' @'-A' 4&5' 46' -A5' E4?-' 2+ 5' 2&F' $2 '2&-' 46' -A5' -2 '2&' :2D-2'&?' 2-' '-?' A52F(' 15$'$5F' -A5' F144D'&G' ?D'1'-?' 46' -A5' :2ED' 44&' 26-51' A'?' 211'$2 (' $'2&4' ?-14&G C' *1G5F' 4&.' ?2 $4' -4' 2+2&F4&' A'?' 41'G'&2 ' D 2&' 46' 4D512-'4&?(' 2&F' 2$2' ' A'E?5 6' 46' A'?' 2*GE5&-5F' ?-15&G-A' -4' 2--2:H' -A5' 5&5EC' '&' A'?' 4@&' M*21-51?' ' A5' D2&'?A' :4EB E2&F51' A2F' '&-5&F5F' -4' :4&6'&5' A'E?5 6' @A4 C' -4' -A5' F565&?'$5(' 2&F(' -44' *&5M*2 ' '&' 641:5' -4' E55-' -A5' 15&:A' '&' -A5' 4D5&' 6'5 F(' 2?' +56415' &4-':5F(' A2F' '&-15&:A5F' A'E?5 6' '&' A'?' D15?5&-' ?-14&G' D4?'-'4&(' @'-A' -A5' 6'J5F' D*1D4?5' 46' 2@2'-'&G' -A5' 5&5EC' -A515' '1:*E?-2&:5?' A2F' &4@' G152- C' :A2&G5F' ' A5' 41'B G'&2 ' '&5M*2 '-C' @2?' F'E'&'?A5F' +C' -A5' 211'$2 ' 46' -A5' -2 '2&' 5$'5?(' 2&F' ?-' ' 6*1-A51' :4ED5&?2-5F' +C' -A5' D15?5&-' F'?41F51 C' ?-2-5' 46' -A5' 15&:A' 21EC' ' 5' H&5@(' E4154$51(' -A2-' '&' -A5' E4?-' D51' 4*?' 5&-51B D1'?5?(' -A5' 2??2' '&G' D21-C' G2-A51?' 2&' 5&-A*?'2?E' 2&F' 2&' 'ED5-*?' '&' '-?' :21551(' @A':A' :4*&-51+2 2&:5' 21G5' &*E51':2 ' 4FF?(' @A' 5' -A5' D21-C' -2H5&' +C' ?*1B D1'?5' '?' D14D41-'4&2+ C' F'?:4&:51-5F(' 2&F' D15D215F(' 2?' '-' @515(' 641' F5652-' +56415' 2' + 4@' '?' ?-1*:H' 14E

I' $#$ $' +'##' #0'JJ'###' 0$ &$' > '/' $"' +'##' &$-': A 8 #&&#$ /# #'2 '/($ ' >'HHH' &$-'J#'< &'#'' 'MA' #0' '#' --'425' 4FE A 9 #$' $ '6# '/': # ' +'###' +':' #0':'&$-'J '###' '## A= --'4B('4B@

; ; ' 7

-A5?5' :4&?'F512-'4&?(' -A5' :2*-'4*?' G5&512 ' 2:M*'5?:5F' '&' $'2&40?' D14,5:-' -4' :14??' -A5' 21'G '2&4(' +C' 5?-2+ '?A'&G' 2' +1'FG5' 2-' 2' D4'&-' 4DD4?'-5' *L'4(' 2' ?E2 ' D 2:5' 4&' -A5' 1'GA-' +2&H' G211'?4&5F' +C' -A5' '"15&:A(' 2+4*-' 64*1' E ' 5?' 2+4$5' -A5'1' A52F.M*21-51?' A5' -'E5'641' -A5' 2--2:H' @2?' 6'J5F' 2?' ?44&' 2?' D4??'+ 5' 26-51' -A5' 2DD142:A'&G' A1'?-E2?(' @A5&' -A5' 15&:A(' 4::*D'5F' @'-A' -A5' 65?-'$'-'5?' 46' -A5' ?52?4&(' E'GA-' +5' -A14@&' 466' -A5'1' G*21F 9

A'?' F2C' 46' G5&512 ' 15,4':'&G' -4' -A5' A1'?-'2&' @41 F' 2-' 5&G-A' 211'$5F ' -' +14*GA-' '-- 5' ,4C' -4' -A5' D2&'21F?(' +*1'5F' '&' -A5' F5D-A?' 46' -A5?5' F1521C' E412??5?(' F5?-'-*-5' 46' E4?-' 46' -A5' &5:5??21'5?' 46' '65(' 2&F' @'-A' ?:21:5 C' 2&C' 4-A51' E52&?' 641' 15?'?-'&G' -A5' :'E2-5' -A2&' -A4?5' 26641F5F' +C' -A5'1' '14&' :4&?-'-*B -'4&?' 2&F' '&$'&:'+ 5' :4*12G5 ' A5C' :5 5+12-5F' -A5' /'2C(' A4@5$51(' @'-A' 2 ' -A5' F5$4-'4&2 '0655 '&G' 2&F' -A5' 'ED4?'&G' ?4 5E&'-'5?' @'-A' @A':A' '-' '?' :4EE5B E412-5F' +C' -A5' 4E2&' 2-A4 ':' :A*1:A' 2&F' -A5' 5J51:'?5?' 46' 15 'G'4&(' 15&F515F' E415' 'ED15??'$5' +C' -A5'1' ?'-*2-'4&(' ?51$5F' -4' 5J2 -' ?-' ' A'GA51' -A5' A514':' :4&?-2&:C' @A':A' A2F' ?*?-2'&5F' -A5E' *&F51' ?*:A' *&D212 5 5F' ?*6651'&G?

&' -A5' E52&' @A' 5(' -A5' E2-51'2 ?' 641' -A5' +1'FG5' @515' :4 5:-5F(' 2&F' -A5' @41H' @5&-' 641@21F' @'-A' ?*:A' F5?D2-:A(' -A2-' 4&' -A5' ;S-A' 46' 5:5E+51' 2 ' @2?' '&' 152F'&5??' 641' :211C'&G' -A5' D 2&' 46' 2-.

]' ' P '## :#$' ' :# ' :&@4E A $&?#$' #' "$-' --' FB)' FB3 A $' :#$' /# K# ' #+$' $' +$' ' $ ' :'* -' A 8 #&&#$ /# #' HHH'# ' /($ ' +' #' #0' '#' --

-2:H' '&-4' 5J5:*-'4&' A5' -2?H' 46' 2C'&G' -A5' +1'FG5' 2:14??' -A5' 1'$51' @2?' '&-1*?-5F' -4' $'2&4(' @A4' A2F' :A21G5' 46' -A5' $2&' A5' :5&-12' 2&F' E2'&' F'$'?'4&' 46'-A5' 21EC' *&F51' 4&?2 $4' @2?' -4' :14??' 2-' -A5' ?2E5' D4'&-M' @A' 5' &F12F2(' 2-' -A5' A52F' 46'-A5' 1521.G*21F(' 2?' -4' 641:5' 2' D2??2G5' 2-' -A5' 4 F' +1'FG5(' 4@51' F4@&' -A5' ?-152E(' 4DD4?'-5' -A5' -4@51' 46'-A5' 21'G '2&4 9

A5' &'GA-' @2?' F21H' 2&F' ?-41EC' $'2&4' D51B 641E5F' -A5' F*-C' '&-1*?-5F' -4' A'E' @'-A' ?*:A' ?' 5&:5' 2&F' :5 51'-C(' -A2-' -A5' @41H' @2?' :4ED 5-5F' @'-A4*-' 2--12:-'&G' -A5' 5&5EC0?' &4-':5' 5' -A5&' :'04??5F' 4$51' @'-A' -A5' $2&G*21F(' :4&?'?-'&G' :A'56C' 46' :2$2 1C(' ?*DD41-5F' +C' 2$2114(' 215F5?(' 2&F' 'L2114M' 2&F(' 62 '&G' 4&' -A5' ? 55D'&G' G211'?4&' 46' *L'4(' :*-' 2 ' -4' D'5:5?' @A4' 466515F' 15?'?-2&:5

A5' 15D41-' 46' -A5' D2&'21F?' A2$'&G' D2??5F' -A5' 1'$51' ?D152F0621' 2&F' @'F5(' 2&F' ?44&' 152:A5F' -A5' A52FB M*21-51?' 46' -A5' 21M*'?' 46' 2 *LL4(' &521' -A5' -4@51' 46'-A5' 21'G '2&4' A5' 15&:A' :4EE 2&F51.'&.:A'56(' @A4' +5 '5$5F' -A5' D2&'21F?' @515' C'&G' 4&' -A5' 4-A51' ?'F5' 46'-A5' 1'$51' 2?' -41D'F' 2?' -A5' ?&2H5?' '&' -A5'1' 4@&' E21?A5?(' @2?' 2?' E*:A' 2?-4*&F5F' +C,-A5' 5$5&-' 2?' '6'2' -A*&F51+4 -' A2F' +*1?-' 4$51' A'?' A52F' 614E' 2' : 4*FB 5?? ?HC' 5' 4?-' &4' -'E5(' A4@5$51(' '&'12 C'&G' ?*:A' 46'A'?' ?:2--515F' 641:5?' 2?' A5' :4* F' 2??5E+5(' 2&F' '&' -A5' E52&' @A' 5' F5?D2-:A5F' $5?' F0 UG15' @'-A' 2

9' A14&':2 F5' 1' 2D'-2&(6# ' +'#' #0' '' &$-' J A' '+''(:2D':J > 5E2F5L('?-' ' $ >' - ' -# $' F5 4? 5C5?(':2D': JJJ'J' -'&& JJ A $&& #' #$ #' > ')4$'' '-2 2G&' 4&' -'3(
$'#' #0'##'* 'FBB A 9 $

+4FC' 46' A41?5' -4' A4 F' -A5' 5&5EC' '&' :A5:H' -' ' A5' :4* F' E2H5' G44F' A'?' 4@&' 15-152-' 4&' 25-2 ' '?' 6'1?-' ?-5D' @2?' -4' F5E4 '?A' -A5' +1'FG5' &521' A'?' 4@&' M*21-51?(' :*--'&G' -A5' E441'&G?' 46'-A5' +42-?' 2&F' -*1&B '&G' -A5E' 2F1'6-' F4@&' -A5' 1'$51 ' 5' 2+2&F4&5F' A'?' -5&-?' 2&F' +2GG2G5(' -4G5-A51' @'-A' &'&5' 46'A'?' A52$'5?-' :2&&4&(' 52$'&G' 5$5&' -A5' ?':H' 2&F' @4*&F5F' -4' -A5' E51:C' 46' -A5' 5&5EC(' 12-A51' -A2&' 5&:*E+51' A'E?5 6' @'-A' 2&C-A'&G' -A2-' ?A4* F' 15-21F' A'?' E21:A ' A5' 15E2'&F51' 46'-A5' 21-' 51C' A5' ?5&-' 641@21F' '&' -A5' $2& ' A5' '&62&-1C' 64 4@5F' &5J-N' 2&F' -A5' 1521(' '&' @A':A' 2 *LL4'-44H' A'?' 4@&' ?-2-'4&(' @2?' +14*GA-' *D' +C' -A5' E5&.2-.21E?(' -4' :4$51' -A5' 15-152-

56415' UG15' :4* F' 152:A' *L'4(' -A5' @A4 5' D2&+A' 21EC' A2F' D2??5F' -A5' 21'G '2&4(' 2&F' 641E5F' 4&' -A5' 1'GA-' +2&H ' !&2+ 5' -4' 62:5' ?*:A' ?*D51'41' &*E+51?(' A5' 65 ' +2:H' @'-A' D15:'D'-2-'4&# 2&F',4'&5F' A'E?5 6' -4' -A5' E2'&' +4FC' 46'-A5' 15&:A(' &4@' '&' 6* ' 15-152-' 4&' 25-2 9

4&?2 $4(' 2612'F' -A5' 15&:A' E'GA-' 5?:2D5' A'E(' ?5&-' 641@21F' 14?D514' 4 4&&2(' @'-A' 2' :41D?' 46' 'GA-' A41?5(' -4' 2&&4C' 2&F' 15-21F' -A5'1' E21:A' *&-' ' A5' :4* F' :4E5' *D ' T55D'&G' -A5' 1'GA-' +2&H' 46'-A5' 1'$51' @'-A' -A5' E2'&' +4FC(' A5' E21:A5F' 12D'F C' -A14*GA' -A5' F5B ?51-5F' :2ED' 46'-A5' 5&5EC(' 52$'&G' '-- 5' 5'?*15' 641

I' +$ / K' '&$- & JJJ#J' ##' >' JJJ' &$-' J#' ' &' '# A' A $' :# $'/# $ ': '* ' ' 9 # $' $ ' +' ' ' #0' ' ' F4 A 8 #&&#$ /# #' ' /($ ' -' &$-' J A $? ' $ "$' ' A=8$+# ' 6# ' / ' $ & ' 0' 8 ' $-' $ #' +' :' --= ((3' ((5 A ? ' ' $#&' & #- ' +' JJ#' ' -' / ' ' $-# $ ' #0' ##' &$-' &J' @)5 A 0$ &$' > ' / ' $" ' +

F2?A5F' +4 F C' '&-4' -A5' D2&'?A' 12&H?(' F1'$'&G' +2:H' .641' 2'-'E 5'-A5'-'F5'46'D*1?*'-' A5' A5$2 '51' 2C21F(' @A4' @2?' ?55&' 2?' *?*2 ' '&' -A5' 614&-' 46' F2&G51(' A2F' -A155' A41?5?' H' 5F' *&F51' A'E(' 2&F' 2-' 5&G-A' :211'5F' 641@21F' +C' A'?' 21F4*1''&-4' -A5' -A':H5?-' 46'-A5' 5&5EC(.' @2?' 15-1'5$5F' @'-A' F'66':* -C' 614E' -A5'1' A2&F?' +C' 2' F5?D512-5' :A21G5' 46'A'?' 61'5&F' 2&F1':4*1-9

A5' D2&'21F?(' ?A2H5&' +C' -A5' $'4 5&:5' 46'-A5' 2?B ?2* -(' ?55E5F' 641' 2' E4E5&-'-4' A5?'-2-5' +*-' 4&?2 $4' A2F' &4@' -'E 5'-4' +1'&G' *D' A'?' E5&.2-.21E?(' @A4' ?*?B -2'&5F'-A5'62 -51'&G' :4 *E&?(' 2&F' 15&5@5F'-A5' :4EB +2-' 4&' E415' 5M*2 ' -51E?' 5' A'E?5 6' @2?' '&' -A5' A4--5?-' 46' -A5' ' 2&F' 2-' 4&5' -'E 5'@2?' 5JD4?5F' -4' 'E E'&5&-' A2L21F' +C' A'?' A41?50?' 4?'&G' A'?' 644-'&G' 4&' -A5' ? 'DD51C' ?4' (' 2&F' :4E'&G' @'-A' A'E' -4' -A5' G14*&F' A5' G5&512' 641-*&2-5 C' 5JD51'5&:5F' &4' '&B ,*1C(' 2&F(' M*':H C' 15:4$51'&G' A'E?5 6(' :4&-'&*5F' -4' 2&'E2-5' A'?' 64 4@51?' +C' A'?' $4':5' 2&F' '&-15D'F' +521B '&G' 2?' +56415

A5' 6'GA-' A2F' 4@' 2?-5F' -@4' A4*1?' A5' D2&'B 21F?(' 2 -A4*GA' ?-' ' '&' 5J:5 5&-' A521-(' @515' 62'&-' @'-A' 62-'G*5' 2&F' @2&-' 46' 644F(' A2$'&G' -12$5 5F' ?'J' 52G*5?(' @'-A4*-' +152H'&G' -A5'1' 62?-' ?'&:5' -A5' D15B :5F'&G' 5$5&'&G' -' @2?(' -A5156415(' @'-A' &4' '-- 5' 2&J'5-C' -A2-' 4&?2 $4' 44H5F' 641' -A5' :4E'&G' *D' 46

1' 8 #&&#$ /# #' #$' #0'#' # ' +'###' #0'JJ'###' --' 44E' 442 A 8$+# ' + '' -'F)4'A' ++ ' #$' /# --' ((5A (@2 A ? ' / ' 8 ' $- #' +'###'-'@@@ A =' $-' 0# - $A :$ # $ '6# ' $&& #M #$ # ' --' 3(' 3@'A' / ' #'H ' +'#'--'(2BA' 'P '#:# $'8 $#'#'* 'FB3 (23 A &#-# ' ++# $ '

' ' 6 ' 8 8 ;

A'?' 1521.G*21F(' 56-(' 2?' -A5' 152F51' @' ' 15E5E+51(' *&F51' &F12F2' 2-' -A5' 4@51' +1'FG5(' -4' F5:'F5' -A5 ' 641-*&5' 46'-A5' F2C

A5' @5 :4E5' ?D5:-2: 5' 2-' 5&G-A' D15?5&-5F' '-?5 6(' A5' F21H' :4 *E&?' 46' -A5' D2&'21F?' @515' ?55&('2-' 6''0?-' 62'&-' '&' -A5' F'?-2&:5(' +C' F5G155?' G14@'&G' E415' 2&F' E415' F'?-'&:-' -4' -A5' 5C5 ' &F12F2' A2F' 52?' C' :211'5F' -A5' 15&:A' 15F4*+-' 4&' A'?' ?'F5' 46'-A5' 21'G.' '2&4(' +*-' '-' @2?' &4-' @'-A4*-' F'6 :*-C' 2&F' F5 2C' -A2-' A5' 15:4$515F' -A5' ?:2--515F' +42-?' @A':A' -A5' 15&:A' A2F' ?5-' 2F1'6-' F4@&' -A5' ?-152E(' 2&F' 6'&2 C' ?*::55F5F' '&' 155?-2+ '?A'&G' A'?' :4E E*&':2-'4&?' @'-A' -A5' 4DD4?'-5' +2&H ' 2$'&G' 2::4ED '?A5F' -A'?(' A5' 12D'F C' 2F$2&:5F' +C' 2' E415' F'15:-' 142F' -4' -A5' 52?-' 46'-A2-' 2-5 C' -12$51?5F' +C' 4&?2 $4' 2 4&G' -A5' ?52B ?'F5(' '&' D*1?*'-' 46' -A5' 15&:A' A5' 2--51' +5A5 F' @'-A' F'?E2C' -A5' 211'$2 ' 46'-A'?' 615?A' +4FC' 46'-144D?(' @A4' ?55E5F' -4' A2$5' F14DD5F' 614E' -A5' : 4*F?' 4&' -A5' 6'5 F' 46' +2-- 5 ' A5C' ?:21:5 C' @2'-5F' 641' -A5' ?A4:H' +56415' -A5C' +14H5(' 2&F' G2$5' @2C ' '&' 2 ' F'15:-'4&?' A5' F'?2+ 5F' :211'2G5?' 46' -A5' 21-' 51C(' @A':A' : 4GB G5F' *D' -A5' 2$5&*5?' '&' -A5' 1521(' '&:152?5F' -A5' :4&6*B ?'4&' 2E4&G' -A5' 6*G'-'$5?(' 2&F' -A5' 644-' @515' -12ED 5F' F4@&' @'-A4*-' E51:C' *&F51' -A5' A55 ?' 46' -A5'1' 4@&' :2$2 1C(' '&' -A5' 52G51&5??' 46' -A5' 2--51' -4' 5J-1':2-5' -A5E?5 $5?' 614E' -A5'1' D51' 4*?' ?'-*2-'4&' A5' D2&'?A' 'GA-' A41?5' 64 4@5F' *D' -A5'1' 2F$2&-2G5' @'-A' -A5' 2 2:1'-C' 46' $5&G52&:5' 4&G' F5 2C5F(' '&B 6 ':-'&G' + 44FC' 15-1'+*-'4&' 641' 2 ' -A5C' A2F' ?4' 4&G' ?*66515F' '&' -A5' E21?A5?' 46' 5??2

-5 &45 G152-5 F'?-2&:5 614E5 -A55 +1'FG55 -A55 142F5 -2H5?5 -@45 F'15:-'4&?(-A55 4&55 -4@21F?5 -1'(-A55 4-A515 -45 25-25 A55 +5@' F515F5 6*G'-'$5?5 A515 ?5D212-5F5 +C5 621 5 -A55 G152-515 D21-5 H55D'&G5 -A55 2?-5 14*-55 4&.5 ?2 $45 ?5&-5 641@21F5 25 +4FC5 46 5 A41?55 *&F515 2$2114 5 2&F5 5F1445 F555 25 2L(+C5 25 ?A41-5 :*-5 2:14??5 -A55 :4*&-1C(-45 '&-51:5D-5 -A5'15 6 'GA-5 5 21G55 &*E+515 65 5 '&-45 A'?5 A2&F?5 '&5 :4&?5M*5&:55 46 5-A'?5 E2&45*$15(+*-5 -A55 G152-515 D21-5 46 5-A4?55 @A45 5?:2D5F5 -A55 ?@41F5 ?*::55F5F5 '&5 -A14@'&G5 -A5E?5 $5?5 '&-45 25-2 9

A55 152-5 2D-2'&5 -44H5 *D5A'?5 M*21-515 -A2-5 &'GA-5 '&5 -A55 &5'GA+4*1'&G5 $' 2G55 46 5 2?-5 4*55 '?5 +12$55 64 4@515 A2F5 G152-5 &55F5 46 5 15615?AE5&-(A2$'&G5 62?-B 5F5 2&F5 64*GA-5 -A14*GA5 -A55 @A4 55 F2C(2&F5 -A2-5 *&F515 25 F1'$'&G5 ?-41E5 46 5 12'&5 @A':A5 A2F5 &4-5 :52?5F5 641 5 25 E4E5&-5 A*?5 -51E'&2-5F5 -A55 +2-- 5(415 14*-(25 '-5 '?5 :4EE4& C5 :2 5F(46 5-A55 21'G '2&4(-A55 E4?-5 'EB D41-2&-5 '&5 '-?5 15?*-?5 46 5 2 5 4&?2 $4?5 $':-41'5?(2&F5 6*1&'?A'&G5 25 ?*'-2+ 55 :4?55 -45 A'?5 +1' '2&-5 E' '-21C5 :21551 6 5 A55 4??5 46 5-A55 15&:A5 '?5 :4ED*-5F5 2-

9 5 *12 F5 4? 2 2:'4?(5 * G# "5 5 G?#&?5 + 5 :2D5 :J:5 >5 2E'51('?-(F5 &##&5 $" 5 G$5 #/ /5 $L 12&:5(-4E5 $5 DD5 = ;(= S >5 ? "?5 5 $+5 $--$5 #5 #5 6 5 F5 ! !42(64 5 ; > *':B * 58 $ 5 /5 /'$:'21F'&'(<?-5 F" -2 5 '+ 1'5 D5 <5 !5 5 / ' #$*$ '# 5 /(+ 5 >5 21'+2C(4ED5&F5 '?-(F5 +-# ?D5 -4E5 ''5 '+5 J'J5 :2D5 J$' >5 $- #' $5 (5 + KK 5$5 A14&5 F5 5 1 5 2D5 *+5 ?*D5 >5 0 5 + *4&2::41?'('21'4(D,5 S=(S 5 & -# '##5 #5 $5 5& $$5 > :'D5 EE'12-4(<?-5 '415&-5 * *+5 ?*D > 21' 2?5 '?-(F5 4*'?5 8#5 # *$ / 5 5 /$5 #' # Z 5 -4E5 ''5 DD5 =< > =<S T5 $5 + -# 1 5 $* 5 ?5 5 *5 ?5 #&?5 ($' 5 $ (" "# 5 8$ #" #$ 5 +0 5 - / & /5 ? /5 + -#

' ' 6 ' 8 8 < ;

614E' -A155' -4' 64*1' -A4*?2&F' E5&(' 56-' F52F' 4&' -A5' 6'5 F(' -4G5-A51' @'-A' 2 ' -A5'1' +2GG2G5(' :4 4*1?(' 2&F' ?D 5&F'F' -12'&' 46'21-' 51C ' A5' D2&'21F?' E *?-' A2$5' ?*66515F' ?5$515 C' F*1'&G' -A5' ?A21D' :4&6 ':-' 4&' -A5' +1'FG5M +*-' &4' 5?-'E2-5' 46' -A5'1' 4??' '?' -4' +5' E5-' @'-A' '&' 2&C' &2-'$5' 41' 6415'G&' @1'-51 9' -' @2?' 4+B ?51$5F' -A2-' -A5' ; -A' 46' 5:5E+51(' 4&' @A':A' -A'?' +2-- 5' @2?' @4&(' :2E5' 4&' 1'F2C(' :-A5' ?2E5' 41A'&4*?' F2C' 46' -A5' @55H' @A':A' A2F' ?4' 46-5&' D14$5F' 2*?D':'.' G*?' -4' -A5' D2&'21F?' *&F51' -A5' D15?5&-' 15'G& 6'

A5' F'?D21'-C' 46' -A5' 641:5?' 2:-*2 C' 5&G2G5F' @2?' D14+2+ C' &4-' G152-(' ?'&:5' -A5' 5J-5&-' 46' :4*&-1C' 4$51' @A':A' -A5' 15&:A' @515' M*21-515F' D15$5&-5F' E2&C' 46

' # $M ' -$ ""#$ ' 4&-5N ' &?' $' $' -# ' $' ' "#$ ' ' +$ ' - ' 621' F) -2 '2' -*--2' 2:51+4 ?:5ED'4 &M ' ' #' #" ' /$'& ' $ /# ' * ' $ '&?' $ & $' ' ' 00 ' - ' /#, $' /$ ' $ - ' L $#' -# / ' /$' # $' / ' ' $ " ' & 00 ' /# &?# /'& - '#' # ' " ' $ " # ' * ' & ' - / V - ' +'##' -' ?' & $ ' / ' ' $ $&# ' +' -' ?' ' *' ?' &?' * +' ?' #+' *' 8 $ ' ' &L & -$ # ' *' $ $' ' ?' L / ' *' 8$ $'#' ?'* G# "' +$ <' #J' ? $ /' - #

64*1-55&-A4*?2&F' H' 5F' '&' +2-B - 5(2' ?-' 'G152-51' &* E+51'+C' 5JB D4?*15' 2&F' 62-'G*5(' +5?'F5?' 2' :4&8 ?'F512+ 5' +4FC' :*-' 466'+C' -A5' D52B ?2&-1C' 4' +2 2&:5' -A'?' + 44FC' 14 (A5' :4ED*-5?' -A5' D2&'?A' 4??' 2-' -@4' A*&F15F' ?2'& '&' -A5' 6'5 F' '?-(F5' 4? 5C5?' 2-4.' ':4?(' :2U' :J:' X' ? #&$' / ' 8 ' $-# $ ' #0' ##' &$-' &J' A' 9 # $' 0# - $ A 8$ #0$> + - / 6# ' #0' J#J' &$-' J'#' A' ; # $ $' -$? ' 0 ' +' '' --' ; (' ; *':':'21F'&'(@A4' A2?' +55& 64 4@5F' '&' -A'?' +C' -A5' 15&:A' @1'-51?(6'J5?' -A5' F2-5' 46' -A5' 14*-' 2-' -A5' ;S-A' 46' 5:5E+51' 6' A4@5$51' 9-' 4:':*115F' 4&' 1'B F2C(' 2?' A5' 2&F' 5$51C' 2*-A41'-C('&F55F(' 2??51-?(' '-' E*?-' A2$5 +55&' 4&' -A5' ; -A(' 2?' ?-2-5F' +C' -A5' D2&'?A' A'?-41'2&?' ?-41' F) -2 ' '+'$'' D'

.

-A5 E' 614 E' :4 E '&G' *D' '&' -' E 5' 641' 2:-'4&' 5$512 '
:41D?(' @A4' ?*::55F5F' '&' 152:A'&G' -A5' 6'5 F' 2-' -A5'
: 4?5' 46' -A5' 6'GA-(' @515' ?5'L5F' @'-A' ?*:A' 2' D2&':' 2?'
U-4' -A14@' F4@&' -A5'1' 21E?' @'-A4*-' 2--5 E D-'&G' 15?'?-B
2&:5 9' A5' 2F E '12+ 5' 21-' 51C('4&' @A':A'-A5' 15&:A'
D 2:5F' :A'56'15 '2&:5(' @2?' &4-' 4& C' 46'&4' ?51$':5(' +*-'
46''&6'&'-5' E '?:A'56'-4' -A5 E (' 2?' @5' A2$5' ?55&' A5'
+1*&-' 46'-A5' +2-- 5' 65 ' +&' -A5'1' :A'$2AC(' @A':A' +415'
'-?5 6'-A14*GA4*-' -A5' F2C' @'-A' -A5' ?D'1'-' 2&F' G2 2&B
-1C' @41-AC' 46' '-?' 2&:'5&-' 15&4@&N &5$51' 6 '&:A'&G'
-' ' -A5' 211'$2 ' 46'-A5' D2&'?A' 1521.G*21F(' 615?A' 4&' -A5'
6'5 F(' 2-' ?4' :1'-':2 ' 2' ,*&:-*15(' -*1&5F' -A5' ?:2 5' '&'
-A5'1' 2F$51?21'5?N 62$4*1

21 C' 4&' -A5' 64 4@'&G' E 41&'&G(' 4&?2 $4' E 2F5'
D15D212-'4&?' 641' ?-41 E '&G' -A5' A5'GA-?' 46' 4*&-' 1B
2&F4(' @A':A' 4$51 44H5F' -A5' :'-C' 46' 25-2 ' *:A'
@2?' -A5' F5?D4&F5&:C' 46' '-?' G211'?4&(' A4@5$51(' -A2-'
-A'?' ?-14&G' D4?'-'4&(' @A':A' +2F5' F56'2&:5' ' 65@'
E 4&-A?' +56415' -4' -A5' E 4?-' F5?D512-5' 5664 1-?' 4e9 D2&.'
'?A' $2 4*1(' @2?' &4@' ?*115&F515F' @'-A4*-' 2' ?-1*GG 5'
A5' ?2 E 5' 655 '&G' 46' F5?D4&F5&:C' A2F' :4 E E *&':2-5F'
'-?5 6'-4' -A5' G211'?4&' 46' 25-2'N 2&F' +56415' 2$2114'
:4* F9' +1'&G' -A5' +2--51'5?' 46' 4*&-' 1 2&F4' -4' +521'
D4&' -A5' :'-C(' 2' 6 2G' 46'-1:5' 211'$5F' 614 E' -A5' 21B
M*'?' 46' 2 *LL4' @'-A' D14D4?2 ?' 641':2D'-* 2-'4&

A'?' @2?' E 415' -A2&' -A5' 152-' 2D-2'&':4* F' A2$5'
$5&-*15F' -4' D14 E '?5' A' E ?5 6 C' A5' 15&:A' @515' '&'
G152-' 641:5N -A5' 641-'6':2-'4&?' 46'-A5' D 2:5' '&' 5J:5 B
5&-' 15D2'1'N '-' @2?' @5 ' D14$'F5F' @'-A' 21-' 51C' 2&F

2E E *&'-'4&(2&F @'-A D14$'?'4&? 641 -5& F2C? 2-
52?-N @A' 5 -A5'1 6 55- 1'F'&G '& -A5 A21+4*1 26641FB
5F -A5 E52&? 641 4+-2'&'&G ?*DD '5? 614E 5GA41&(
5&42(2&F 4-A51 61'5&F C D41-? *- -A5 15&:A
A2F 4?- 2 A521-N -A5C @515 ?415 C @2?-5F +C F'?B
52?5N -A5'1 +*4C2&- ?5 6.:4&6'F5&:5 @2? G4&5(2&F
-A5'1 ?D'1'-? +14H5& +C -A5 ?51'5? 46 15$51?5? @A':A
A2F 64 4@5F @'-A4*- '&-511*D-'4& 614E -A5 6'1?-
A4*1 46 -A5 :2ED2'G& -4 -A5 2?- F'?2?-14*? 2662'1 46
-A5 21'G '2&4 A5 $51C 5 5E5&-? ?55E5F -4 A2$5
52G*5F 2G2'&?- -A5E *1-A51 56641-? -A5C F55E5F
2 61*'- 5?? ?-1*GG 5 2G2'&?- F5?-'&CN 2&F -A5C &4@
44H5F @'-A E5 2&:A4 C 4&G'&G -4 -A5'1 &2-'$5 2&F(
52G51 4& C -4 M*'- -A5?5 .4E5&5F ?A415? 641 5$51

A5 152- 2D-2'& E2F5 &4 F'66':*-C '&G12&-'&G
?*:A -51E? 2?(@A' 5 -A5C A2F 2 ?A4@ 46 A"+512 '-C(
?5:*15F A'E -A5 E4?- 'ED41-2&- 61*'-? 46 $':-41C
A'? ?*'-5F A'? :2*-'4*? -5ED51 621 +5--51 -A2& D15??B
'&G F5?D512-5 645 -4 5J-15E'-C 5 @2?(E415B
4$51(@'-A 2! A'? ?*::5??5?('& &4 :4&F'-'4& -4 F4
?4N A5 @2? @'-A4*- 6*&F?(2&F(2? *?*2 (F55D C '&
211521? -4 A'? 21EC N @A' 5 -A515 @2? ?:21:5 C 2 12B
-'4& 46 +152F(?2C? 2& -2 '2& A'?-41'2&('& A'? @A4 5
:2ED 9

< = - @2? 2G155F +C -A5 -51E? 46:2D'-* 2-'4&(

1 P '## :# $ 8 $ ' ' * + ' ' #0\' ' &$- J# A 8$ =
FB3 FB5 A ? / '8 ' $= # 6# / $ & '1 + ' '
-# $ #0 ## &$- &J# A -- (@('(@@ A # + /#' 6# '
$ > - -# - &&JJ / $ $# + J' &$-
A 8 #&&#$ /# #' #$ #0 '#' JJ#J
- 442 A 9 # $' $ / $"

'

)2&*21C <?-(< =(-A2- -A5 15&:A ?A4* F 5$2:*2-5 25-2 2- 4&+5(2&F F5 '$51'' - *D -4 -A5 D2&'21F?(@'-A '-? 21-' 51C(E*&'-'4&?(2&F E' '-21C ?-415? 46 5$51C F5?:1'D-'4& A5 D1'?4&51? 4& +4-A ?'F5?('&: *F'&G -A4?5 -2H5&' '& -A5 D15:5F'&G :2ED2'G&(2& 2112&G5B E5&- G152- C -4 -A5 2F$2&-2G5 46 -A5 5&5EC(@515 -4 +5 15?-415F 2&F -A5 21EC '& 25-2'@2? -4 +5 2 4@B 5F 2 6155 D2??2G5 +C 2&F 41 ?52(2? -A5C ?A4* F D15B 651(-4 -A5'1 4@&: 4*&-1C 9

14E -A5 E4E5&- A4?-' '-'5? @515 +14*GA- -4 2

1 9 # $ 6# + # $ #0 ' $* '?$'# " 0 $D '$ / L
&$- J# A 8$+# 6# ($ / ? > G G * /
$ & + ' ' - - (@(' (@@ A / ? &? 0$ $
+$ / K 6# &$- &J& & /+ + + #+L
A 8#$ 2 /[$ #$ #0 - 0$0 ? * ?$?
JJ#J &$- '#' &?' ? G ' $ $ > / L
-$ #& $ + # G$ # ? > +$>' ?$' 0 *
+$/ * ? $ #$ '$ # '# ? ? - & # ' * ' ? # ' $ # *# /L
&$-# $ # ? 2$-- / # " ? + ' $0 ' * & '
?$ ' $ * ? " $ " L # $&, # & / # &? $, #L
'# / ' G? ?$/ 0 $D ' ' &$' # & ' G# ? - & '
? - & /# " &$+-$#" * * ? +' $ ' G# ? $--$ >
$ $0 #$' G * /'# '$ + '# ' & + - +# # " ? # ' G ' ? '
? - $& ' P '## :# $ $" ' * ? 'G? '$**$# ' ? ' /# L
8 $ '# * F@F F@4 FB5 . & # * ?' 8 $ $- $#
8 $ ' '# '& , & * ?# ' 7# ?' "$ / ' ? ' G -# "
+$ #* 0 $&? * *$# ?' L &?$ " '+$/ 0>' & $# ' + / +'
* # " "$ / ? +' $ '& +L &? ?# #$ ' $"$# ' ? '
- ? / / # ? ' $ > ' -$ # ? " $ ' * $ ' #+# $ '
? +' $ '- # ' * $ ' ' # ' ' # >' ' ? ' ? ' $ #$ '
/ " - ' * $ ' ' # ' # /# & #+# $ >' * / # ' ? '
$- ' ?# '$& # '?$ '0 "?' - $& ' ? ' # ' ' ? ' #"? '
'?#+' + &? + # / 0 , >' * /$ # '* '# '# '$ >' & +L
G# ?' ?' &? G # ' L - $ >'$? # >' '8$# $ / '
/ / ' 0 * ' ? ' M $ > G$ ' #'$ # M' +' #' ' - ' F@(A '
#" / '#*' G '$ ' ' & /# ' ? ' 8$+# ' 6# ' / ' $ & ' +'
$ #$ ' ?# #$ ' 8 $ ' ' : ' - ' (@B A :$ # $ ' 6# ' / '
- +- #> * / ' # & / ' M #' H ' +' #' - - ' (25 '
? ' $- # $ ' / 'G# ?# ' # '
? ' + &? # ' & $# < ?$ (FE

: 4?5(4&?2 $4 F'?D 2C5F ?*:A G5&514*? ?CED2-AC 641 A'? 2-5 5&5E'5?(2&F ?*:A A*E2&'-C '& 15 '5$'&G -A5E(2? 156 5:- E415 A4&4*1 4&A'? :A212:-51 -A2& 2 A'? $':-41'5? 5?:1*D* 4*? C 5&641:5F -A5 62'-AB 6* D51641E2&:5 46 -A5 -152-C(2&F ?5$515 C D*&'?A5F 2&C $'4 5&:5 466515F -4 -A5 15&:A +C A'? 4@&E5& '? +5&'G& 2&F :4*1-54*? F5E52&4*1 -4@21F? -A5 $2&M*'?A5F(?4 15E4-5 614E -A5 'E2G5? 46 -51141 @'-A @A':A A5 A2F +55& A'-A51-4 2??4:'2-5F '& -A5'1 E'&F?(5J:'-5F .*&M*2 '6'5F 2FE'12-'4&M 2&F -A5C -5?-'6'5F -A5'1 ?5&?5 46 A'? 2E'2+ 5 M*2 '-'5?(+C ?D52H'&G 46 A'E 2? -A5 G5&-' :2D'-2'&5 5- G5&-' :2$2 '51 K 9

A5 &5@? 46 -A5 14*- 46 -A5 21'G '2&4 2&F -A5 ?*115&F51 46 25-2 F'66*?5F G5&512 G 44E 2&F :4&B ?-51&2-'4& 4$51 12&:5 A515 @2? ?:21:5 C 2 62E'B C 46 12&H(?2C? 2 @1'-51 46 -A2- :4*&-1C(-A2- A2F 4- ?4E5 4&5 46 '-? E5E+51? '&$4 $5F '& -A5?5 ?2F F'?2?-51? "P" A5 :4*1- @5&- '&-4 E4*1&'&G A5 H'&G(E41-'6'5F 2- -A5 F'?:4E6'-*15 46 2 A'? 46-C ?:A5E5? +C -A5 645 @A4E A5 F5?D'?5F(?A*- A'E?5 6 *D '& A'? D2 2:5(156*?'1 G 2::5?? -4 5$51C 4&5(*&-' -A5 2G'-2-'4& 46 A'? ?D'1'-? -A15@ A'E '&-4 2& ' &5?? @A':A A2F @5 &'GA D14$5F 62-2

1 + / $ " &?$- *#* > $ $* ?# 0 ? / : $- / + + J'# ? + # #+$"# $ # ? " / A +$ / K &$- &J& A G# ? ? ?$/ * ? # # P '## :# * ; (; > / $/ G? 0 $>0 # / # ? / 8 $-# $ &$- # / $ >$ /- # +$? &J# ? # $ +0 & # "# ? '# # * ? / &? #L

X #$ + G? '# # /? ? & - #&$:# / 0$ D * ? 8$ #" #$ + 6 + + # &'#

;<=

52&@A'5(A'?5J2?D512-5F655'&G?64*&F2&4+B ,5:-4&@A':A-4$5&--A5E?5$5?'&-A5*&641-*&2-5 G211'?4&46 25-2(@A4?4D*?'2&'E4*?C2+2&F4&5F -A5'1D4?--4 15-*1&-4-A5'1 4@&:4*&-1C 5:4EB E2&F5F-A5E-4@'&-51'&-2C(2&F&4--4 15:14??-A5 D?@'-A4*-6*1-A51 41F51?' ?5&-5&:5F 2&F1':4*1-2&F UG15-4+2&'?AE5&-(641'&?*+41B F'&2-'4&-4-A5'1:4EE2&F51.'&:A'56 U5'2--51(641' A'?:4&F*:-(E415D21-':*21C('4F6415-A5+2--5'46 51'G&42 2&F A5'A2&G5F*D'Ù-A5':4EE'??21'5?'46 -A5'21EC(@A4?5'&62E4*?D5:*2-'4&?'A2F+55&2' D1'&:'D2':2*?5'46'-?1*'D#9

*--A5'ED4-5&-@12-A'46-A5'1'E4&21:A'@2?'&4-' &55F5F-4 6'-A5+'--51':*D'@A':A'-A5 15&:A'?4B F'51?'@515'&4@'F12'&'&G-4-A5'F15G?'21G5'&*EB +51'46'-A4?5'@A4'5E+2,'5F'641' 5&42'F'5F'46'-A5' E2 2F'5?':4&-12:-5F'F*1'&G'-A5'1'4&G'+'$4*2:'&'-A5' E21?A5?'46'&-*1&25' A5'15?-'15:14??5F'-A5' D?' '&-4' 12&:5(-44'F5?D512-5'-4'A55F'-A5'1'E2?-510?' D14A'+'-'4&' A4?5'@A4'-44H'-A5'1'@2C'+C'2&F'?*6B 6515F'?-'E415'?5$515C'614E'-A5'-2'2&'D52?2&-1C(@A4'15-2'2-5F'&'6*E52?*15'-A5'+21+21'-'5?'-A5C' A2F'?4'4&G'5&F*15F'614E'-A5'15&:A'A5C'@515' ?55&'@2&F51'&G'H5'?D5:-15?'2 4&G'-A5'A'GA'142F?' 2&F'D1'&:'D2':'-'5?'4&'-A5'14*-5(D'&'&G'@'-A':4F' 2&F'62E'&5 U 2&F'2 '-A5'A4?D'-2?'&'4E5(2?'@5' 2?'-A5'?-2+5?(?A5F?(2&F'5$51C'4-A51'D2:5(A4@5$51

I'8$+# '6# '/' $&' /% $' +'#' #0'#'--'44F' +':'--'(@B'A(@3A' 44))A'8 $#'6# '/' #' P'## :#' ':# '*' H '-'2)4
FB5'F)EA8 #&&#$ /# #'2

E52&(26641F'&G ?A5 -51(@515 6' 5F @'-A -A5 @15-:AB 5F $2G2+4&F?(52G51 4& C -4 6'&F ?4E5 4+?:*15 15-152- -4 F'5 '&

A5 :A'56? 46 -A5 5JD5F'-'4& 6215F '-- 5 +5--51 E4&G 4-A51?(-A5 21M*'? 46 2 *LL4(?44& 26-51 152:A'&G 5&42(@2? :211'5F 466+C 2 65$51 :2*?5F +C A'? F'?-15?? 46 E'&F 2&F1':4*1-(-44 A2*GA-C -4 5&F*15 F'?G12":5(2'F $'4 5&- A2&F? 4& A'E?5 6 . UG15(E415 :* D2+ 5(+*- E415 :4*12G54*?(?*1$'$5F -4 +5 15:4&:' 5F @'-A A'? ?4$515'G&(2&F -4 F'5 2 ?4 B F'510? F52-A 4& -A5 6'5 F 46+2-- 5 9

*:A 215 -A2 F'?E2 :4 4*1? '& @A':A -A5 15&:A A'?-41'2&? F5D':- -A5 2?- ?-1*GG 5 E2F5 +C -A5'1 E4&21:A 641 -A5 15:4$51C 46 2D 5? 5@ E' '-21C 5JD5F'-'4&? A2$5 :4EE5&:5F *&F51 E415 +1' '2&- 2&F 'ED4?'&G 2*?D':5? M 65@ A2$5 +55& :4&F*:-5F '& U?4 ' .2F$'?5F 2 E2&&51 -A14*GA -A5'1 @A4 5 D14G15?? M 2&F &4&5 2--5&F5F '& -A5'1 : 4?5 @'-A E415 '&F'?B :1'E'&2-5 2&F 4$51@A5 E'&G 1*'&

& -A5 1F 46)2&*21C(2@E(8 $ ' E2F5 A'? 5&-1C '&-4 25-2 M 2&F -A5 -A*&F51? 46 A'? 41FB &2&:5(&4@ 641 -A5 6'1?- -'E5 A521F 614E '-? +2-- 5B E5&-?(2&&4*&:5F -A2- -A'? ?-14&G H5C -4 -A5 F4E'&B '4&? 46 2D 5? A2F D2??5F '&-4 -A5 A2&F? 46 12G4& 6-51 2 ?A41- F5 2C 641 -A5 15615?AE5&- 46 A'? -144D?U A5 ?5- 4*- 641 -A5 :2D'-2 *- 2E'F?- -A5 G5&512 ,*+' 55 @A':A G155-5F A'? 15-*1&(A5 @2? ?5'L5F(@'-A

I $&& #' #$ # ' - ' &J& A ' P '# ' ' - $ A A $' $ ' : ' * ' F4 A' 8$# $ / ' #'$ # ' / ' ' ' $ / ' ' $ $&# ' '&$- ' /(-) + '#' ' -- ' F@(A F@B

2 65$51 +14*GA- 4& +C -A5 '&:5??2&- 62-'G*5 2&F A'GA
E5&-2 5J:'-5E5&- '&@A':A A5 A2F +55& H5D- 641 -A5
2?- 64*1 E4&-A? A5 2--2:H @2? ?5$515(2&F -A5
5$5&- 641 ?4E5 -'E5 F4*+-6* *1'&G -A'? ?-2-5 46
?D5&?5 -A5 D+ ': E'&F @2? '& -A5 F55D5?- 2G'-2
-'4& A5 D4D* 21 E2&&51? 46 4&?2 $4 A2F @4&
-A5 A521-? 46 -A5 G'FFC D54D 5 46 2D 5?(@A4 -12&?
65115F -A5'1 2665:-'4&?('&F55F(2? 152F' C 2? -A5'1 2
5G'2&:5 2&F D12C51? 2&F $4@? 641 A'? 15?-412-'4&
@515 466515F *D '& 2 -A5 :A*1:A5? 2&F E4&2?-51'5?
46 -A5 :'-C '? 5J:5 5&- :4&?-'-*-'4& 2- 5&G-A G4-
-A5 +5--51 46 A'? F'?52?5 ? ?44& 2? -A'? 62$4*12+ 5
15?* - @2? 2?:51-2'&5F(-A5 @A4 5 D4D* 2-'4&(1*?A'&G
-4 -A5 4-A51 5J-15E5(2+2&F4&5F '-?5 6 -4 2 F5 '1'*E
46 ,4C 2&F @A5& A5 @2? ?*66':'5&- C 15:4$515F -4
G'$5 -A5E 2*F'5&:5(E5& 46 2 12&H? -A14&G5F -4
2?-5 *4$4 -4 -5&F51 -A5'1 :4&G12-* 2-'4&?(2&F
4+-2'& 2 ?'GA- 46 -A5 A514(@A4 &4@ 15-*1&5F -4 -A5'1
:2D'-2 (641 -A5 -A'1F -'E5(@'-A -A5 2*15 46 $':-41C
4& A'? +14@ $51C -4&G*5(?2C? A'? 5&-A*?'2?-':
+'4G12DA51(@2? 5 4M*5&-''& A'? D12'?5 ?4E5 F@5 B
'&G 4& A'? &4+ 5 D41-(2&F -A5 +52*-C 46 A'? :4*&-5B
&2&:5 4-A51? 4& -A5 5 5G2&:5 2&F 2E5&'-C 46 A'?
E2&&51? 2&F 2 F2LL 5F +C 2 ?D'1'- 46 E*&'6':5&:5
@A':A @4* F A2$5 +5:4E5 14C2 -C '-?5 6 9

A5 -'F5 46 D2&5GC1':@2? ?@5 5F +C E415 -A2&
4&5 +21F(@A4 ?4*GA-(-A4*GA @'-A '&F'66515&- ?*:.

P '# :# $ 8 $ ' * 0$ &$ > / $" + F)E F)2 A ; # $ $:#/$ ## * 4@5 A +$ / K d
+ # - F53 = ? #&$ / &$- &J& &J&#
8 $ $- #0 ### &$- #ZZZ

:5??(-4 :2-:A '&?D'12-'4& 614E ?4 G 41'4*?' 2 -A5E 5 -1*?-'&G(F4*+- 5??(-A2- A'?' '+512 A2&F @4* F &4- ?-'&- -A5 15:4ED5&?5' -4 -A5 D15:'?5 E52?*15 46 F5?51- E 'F -A'?' G5&512 +*1?- 46 2F* 2-'4&(-A5 E*?5 46 2&&2L214(@41-A 2 A'?' -1'+5(@2?' 2 4&5 ?' 5&- 641 -A5 -14DA'5?' 46 -A5 :4&M*5141 @515 12'?5F 4& -A5 1*'&?' 46 -A2- 14C2 A4*?5 *&F51 @A':A -A5 +21F A2F +55& ?4 4&G ?A5 -515F 2&F -A'?' ?' 5&:5(?4 1215 '& A'?' -*&56* +15-A15&(E*?- +5 2FE'--5F -4 1566 5:- E415 :15F'- 4& A'?' &2E5 -A2& -A5 +5?- A5 5$51 ?*&G 9

A5 6'1?- +*?'&5??' 46 4&?2 $4 @2?' -4 :2 -4G5-A51 -A5 F'66515&- 41F51?' 46 -A5 ?-2-5(2&F 15:5'$5 -A5'1 42-A?' 46 2 5G'2&:5 -4 T'&G 51F'&2&F 5 &5J- 4:B :*D'5F A'E?5 6 @'-A -A5 &5:5??21C 2112&G5E5&-?' 641 -A5 1541G2&'L2-'4& 46 -A5 G4$51&E5&-(2&F 641 15B 641E'&G $21'4*?' 2+*?5?' @A':A A2F :15D- '&-4 -A5 2FB E'&'?-12-'4& 46 ,*?-':5 E415 D21-':* 21C &' -A5?5 2--5ED-?' -4 '&-14F*:5 41F51 A5 @2?' &4- 2 '-- 5 -A@21-5F(A4@5$51(+C -A5 '&?*+41F'&2-'4& 46 A'?' 4@& ?4 F'51C A5C 4*F C :2E4*15F 641 -A5 F'?B :A21G5 46 -A5 211521?(?-' ?A2E56* C D14-12:-5F(-' (-A5'1 F'?:4&-5&-?' ?@5 '&G -4 4D5& E*-'&C(-A5C 641B :'+ C ?5'L5F 4& -@4 46 -A5 D1'&:'D2 D 2:5?' '& -A5 H'&GF4E 2?' ?5:*1'-C 641 -A5 D2CE5&- 4&?2 $4 :A2?-'?5F -A5'1 '&?4 5&:5 +C F'?+2&F'&G ?5$512 46 -A5 E4?- 15612:-41C :4ED2&'5?(2&F ?5&F'&G -A5E A4E5 641 D*&'?AE5&-(5 5&F52$4*15F -4 15 '5$5 -A5E '& D21- +C 12'?'&G :4&-1'+*-'4&?' 46 -A5 52D4 '-2&?' +*- -A5 ?4 F'51?' -44H -A5 E2--51 '&-4 -A5'1 4@&

A2&F?(4DD15??'&G -A5 *&641-*&2-5 D54D 5 4& @A4E8 -A5C @515 M*21-515F '& 2 E2&&51 @A':A 15&F515F -A5'1 :4&F'-'4& ?:21:5 C E415 -4 512+ 5 -A2& @A5& (5JD4?5F -4 -A5 A41141? 46 2:-*2 @21 9 A'?@2? -A5 '&-14F*:-'4&(2::41F'&G -4 *'::'21F'&'(46 -A4?5 ?C?. '5E2-':E' '-21C J2:-'4&? '& -'E5 46 D52:5(@A':A +5:2E5 ?4 :4EE4& 26-51@21F? '& -2 C(2FF'&G 2& '&:4&:5'$2+ 5 2E4*&- -4 -A5 4&G :2-2 4G*5 46 @45? @A':A 266 ':-5F -A2- *&A2DDC 2&F 6

E'F?- A'? E2&'64 F F*-'5?(4&?2 $4 F'F &4- 641B G5- -A5 G2 2&- 466':51? @A4 A2F +41&5 @'-A A'E -A5 +*1F5&? 46 -A5 @21(2&F A5 15M*'-5F -A5'1 ?51$':5? '& 2 D1'&:5 C ?-C 5(+5--51 ?*'-5F -4 A'? 655 '&G? -A2& A'? '&-515?-?(2? ?*+?5M*5&- C 2DD5215F E4&G -A5E @515 2$2114(5&F4L2(&F12F2(5&2$'F5?(5C$2(-A5 -2 '2&? $'2&4 2&F -A5 -@4 4 4&&2?(E4?- 46 @A4E '$5F -4 F'?D 2C -A5 5??4&? 46 -2:-':?(@A':A -A5C 'E+'+5F *&F51 -A'? G152- :4EE2&F51(4& 2 ?-' @'F51 -A52-15 46 G 41C('& -A5 15'G& 46 A21 5? 5 E2F5 -A5E G12&-? 46 :'-'5?(641-15??5?(2&F 5J-5&?'$5 2&F?(2::41F'&G -4 -A5'1 $21'4*? :2'E?(-4 +5 A5 F 2? 6'56? 46 -A5 :14@& -A'? @2? F4&5 @'-A -A5 D15$'4*? ?2&:-'4& 46 A'? 14C2 E2?-51(51B F'&2&F -A5 2-A4 ': A5C F'F ?4E5 $'4 5&:5(A4@B 5$51(-4 A'? E415 5:4&4E':2 ?D'1'-(2&F A5 @2? A521F

I U '# - + - '# = G?#&? ?$ + ?# '" *'# &# #& ' '# $V &?# '" " $& ' ' / ' ? ? $#$ 0 "$ ' $ ' ?# ' ?$ / * / > * $ >' - # / ' * ' ? ' - * 9 # $' $ ' + ' ' #0 * ? ' G ' G?#&?' $' & >' : ' &' J#' A 8 #&&#$ /# #' 2 $ /' $' ?$ *' $ ' G '" '1 *' /($ ' #0' '#' -- ' 4(E 4(2 A # #&$!$' ? ' 0 $ #* ' $+ 0$ &$' 0# -

?4E5@A2-' D55$'?A C' -4' 5J: 2'E(' $$' -' +44-?' '-- 5'641'
4&?2 $4' F5' 41F4$2' -4'A2$5'@4&' 2'H'&GF4E'641' E5('
'6' A5' 2$'?A5?' '-' 2 ' 2@2C(' +56415' '-' :4E5?' '&-4' EC'
A2&F?K' -' +5G2&' -4' +5' D51:5'$5F' 2-' :4*1-' -A2-' -A5'
152-' 2D-2'&' @2?' -44' D4@516* '641' 2' ?*+,5:-99'
52&@A' 5' 4*'?' Z ' @2?' 6' 5F'@'-A' ?51'4*?' 2DB
D15A5&?'4&?' 641' -A5' 62-5' 46' A'?' D4??5??'4&?' '&' -A5'
&41-A' 46' -2 C' '?' M*4&F2E' 2 '5?(' -A5' ED5141'
2J'E' '2&' 2&F' -A5' 15D*+ ':' 46' 5&':5(' -A5' 2--51'
E415' 5?D5:'2 C(' A2F' ?A4@&' E2&C' '&F':2-'4&?(' &4-'
E515 C' 46' :4 F&5??' -4' A'E?5 6(' +*-' 46' 2' ?5:15-' *&F51B
?-2&F'&G' @'-A' A'?' 1'$2 (' -A5' T'&G' 46' D2'&' A5'
15?- 5??' 4D5')* '*?' ' A2F' ?:A5E5?' 46' A'?' 4@&('
@A4 C' '&F5D5&F5&-' 46' 12&:5' A5' 15D*+ ':?' 46'
'?2' 2&F' 5&42(' -A5' 2?-' 4&5' 46' A51' 2$4@5F' F5D5&B
F5&:'5?(' A2F' 5&-515F' '&-4' :4115?D4&F5&:5' @'-A' -A5'
152-' 2D-2'&(' 2&F' '&$'-5F' A'E' -4' 2??*E5' -A5'1' D14._'
-5:-'4&'N' @A' 5' ?5$512' 46' -A5' F'?2665:-5F' D21-C' '&'
' 2&' A2F' 2??*15F' A'E' 46' -A5'1' 2:-'$5' ?*DD841-' ''"
:2?5' A5' @4* F' E21:A' @'-A' ?*66':'5&-' 641:5' -4' 4$51-*1&'
-A5' 5J'?-'&G' G4$51&E5&-' &F55F(' &4-' 4& C' 12&:5('
+*-' *14D5' '&' G5&512 (' 5JD5:-5F' -A2-' -A5' D2&'?A'
:4E E2&F51' @4* F' 2$2'' A'E?5 6'46' -A5' D15?5&-' :1'?'?'
-4' D*?A' A'?' $':-41'4*?' 2112?' '&-4' *DD51' -2 C(' 15$4 *B
-'4&'L5' *?:2&C' '&' A'?' @2C(' 2&F(' @15?-'&G' ' 2&' 614E'
-A5' 15&:A(' F1'$5'-A5E(' :1'DD 5F' 2&F' F'?A521-5&5F' +C'
-A1'1' 2-5' 15$51?5?(' +5C4&F' -A5' D? 6

]' ' P '## :# ' * ' F)E' X' 8 #&&#$ /# #' ' / $ '
F)2'A ? #&$ / 8 $ ' $-' #0' '#' -' 443' A'9 # $' 6# '
#0' ###' $-'# A $'* ' F(/ '6 ' +'#' #0' ' ' $-' J#'
A 0$ &$

*- 4&?2 $4 A2F D 5&-C 46 4::*D2-'4& 4& A'? A2&F? '& ?5-- '&G -A5 F'?41F515F ?-2-25 46 2D 5?. T'&G 51F'&2&F(A'? ?4$515'G&(&4-@'-A?-2&F'&G -A5 C2E+'-'4& 46 *&'$51?2 :4&M*5?- 2+?*1F C 'ED*-5F -4 A'E +C -A5 15&:A @1'-51?(A2F &4 F5?'G& -4 5J-5&F A'? 2:M*'?'-'4&? +5C4&F @A2- A5 :4* F D51E2&5&- C E2'&-2'& '? -152?*1C(&5$51 4$516 4@'&G(@2? -44 F55D C F12'&5F +C -A5 2-5 A52$C F5E2&F? 4& '-(641 A'E ?4 ?44& -4 5E+21H 4& 2&4-A51 D51' 4*? 5&-51B D1'?5(-A2- E*?- 14*?5 2&5@ -A5 ?@21E? 46 5&5E'5? @A4 ?55E5F @' '&G -4 15?- '& M*'5- 26-51 -A5'1 4&G 2&F 5JA2*?-'&G ?-1*GG 5M &41 '? -A515 2&C 152?4& -4 ?*DD4?5 A5 ?'&:515 C :4&-5ED 2-5F ?*:A 2 E4$5E5&- 641 2 E4E5&- 9

A5 2DD15A5&?'4& 46''-(A4@5$51(2&?@515F 51F'B &2&F0? D*1D4?5(+C D15D21'&G -A5 15&:A E4&21:A -4 2112&G5 A'? F'6515&:5? @'-A A'? 1'$2 (2? -A5 2--51 &4@ 521&5?- C F5?'15F(+C &5G4-'2-'4& &F55F(-@4 D2&'?A E'&'?-51? A2F 15?'F5F F*1'&G -A5 G152-51 D21- 46 -A5 @21 2- -A5 15&:A :4*1-('& -A5 $'5@ 46 'EB D14$'&G -A5 6'1?- 4D5&'&G -A2- ?A4* F 4::*1 641 2:B :4ED '?A'&G -A'? 4+,5:-M 2&F +C -A5'1 2G5&:C 2 -152-C @2? :4&: *F5F(-4 :4&-'&*5 641 -A155 C521?(@A':A G*212&-55F -4 12G4& -A5 *&F'?-*1+5F D4??5??'4& 46

A 0$ &$ > / #=$" > / $ *? - #+ HHH&$-J#' A $&& # #= + / $ &?$ " "?* ? $ # --3@ & , *$ D# "/ +< $ / I 9 + : #0 ' &$- J'# +$/ # #"? ? -$ #L ? &$+-$#" $"$# # $ / 0> =*#* ? * ? G? Z ?$/'& ? -$ # ?& G 0 # '"/#$G * + $- # * 442) (+# # * +$ $= 0$ &$ > / $" ' /# , #'$ 5 @ B3 EEE + ##* 4@5

A51' :4&M*5?-?' F*1'&G' -A2-' D51'4F' A5' :A'56' 21-'B
: 5?' D14$'F5F' 641' -A5' 'E E5F'2-5' :5??2-'4&' 46' A4?-'B
'-'5?' +5-@55&' -A5' +5 'G515&-?(' 2&F' -A5' :4ED 5-5' 15B
5?-2+ '?AE5&-' 46' -A5'1' :4E E51:'2 ' 15 2-'4&?' 2&F' '&B
-51:4*1?5(' @'-A' -A5' 5J:5D-'4&' 46' 2D 5?(' 614E' @A':A'
-A5' 15&:A' @515' -4' +5' 5J: *F5F' A5' D2&'?A' :14@&'
@2?' -4' A2$5' 6* ' D4@51' -4' 15F*:5'2 ' 15612:-41C' D 2:5?'
'&' -A2-'H'&GF4E M' 2&F' -A5' :4&-12:-'&G' D21-'5?' ?4 5E&B
C' D 5FG5F' -A5E?5 $5?(' 52:A' -4' 15&F51' &4' 2??'?-2&:5(
?5:15- C' 41' 4D5& C(' -4' -A5' 5&5'-''5?' 46' -A5' 4-A51' A5'
-152-C(' @A':A' @2?' -4' 1*&' 614E' -A5' ; -A' 46' 5+1*21C'
< =(' @2?' ?'G&5F' +C' -A5' 15&:A'H'&G' 2&F' -A5' D2&'?A'
D 5&'D4-5&-'21'5?' 2-' C4&?(' 4&' -A5' <<-A' 46' -A2-' E4&-A('
2&F' 12-'6'5F' +C' 51F'&2&F' 2&F' ?2+5 2' 2-' -A5' :4&$5&-'
46' -' 21C' F5' 2' 5,412F2(' -A5' <?-' 46' 21:A' 64 B
4@'&G 9

A515' @2?' ?-' ' 2' ?E2 ' ?D4-' '&' -A5' A521-' 46' 2D 5?('
:4ED15A5&F'&G' 5&4?2(' 2&F' ?5$512 ' 2F,4'&'&G' -4@&?('
@A515' 4*'?' F0 1?' 2&F' A'?' +12$5' 2??4:'2-5?' C5-' A5 F'
4*-' 2G2'&?-' -A5' D2&'?A' 21E?' -A4*GA' :*-' 466' +C'
-A5' 4D512-'4&' 46'-A'?' -152-C' 614E' -A5' A4D5' 46' 6*1-A51'
?*DD41-' 614E' A4E5(' -A5' 15&:A' H&'GA-' F'?F2'&5F' -4'
?*115&F51M' +*-' ?2 '5F' 4*-' 2-' -A5' A52F' 46' A'?' '-- 5'
-144D' 46' G2 2&-' $5-512&?(' 2&F' -A*?' 21E5F' 2-' 2 '
D4'&-?(' ?2C?' 12&-FE5(' @'-A' 2&:5' '&' 15?-(' -44H' A'?'
@2C' -A14*GA' 2D 5?(' 2&F' -A5' :5&-15' 46' -2 C' 5'
E21:A5F' '&' +2-- 5' 2112C(' 5$C'&G' :4&-1'+*-'4&?' 641

I' ?' $>'#' '0'* /' A'9 #$' +'''' #0'''' &$-'
#' + ' -' #- +$#, ' J#' A' $&?#$' #' "$K'##'$'
+'#'' 'JJ'#' --'@2A @4 $ &#$' '#J' 0=

A'?' ?*DD41-' 4&' -A5' D 2:5?' -A14*GA' @A':A' A5' D2??5F'
&' -A'?' @2C' A5' 5&-515F' 12&:5(' 2&F' D15?5&-5F' A'EB
?5 6' +5641 5' -A5' :4*1-' 2-' 4'?' A5' H'&G' 2&F' M*55&('
F5 'GA-5F' U'-A' +'?' D14@5??(' :2E5' 641@21F' -4' @5B
:4E5'A'E(' 2&F' E2F5'G44F' :A551(' ?2C?' -A5'4 F' :A14&'B
: 51(' 641' A'E?5 6' 2&F' A'?' :4ED2&'4&?(' @A4E' -A5C' 15B
:4ED5&?5F' @'-A' '+512' 21G5??5?(' D14661'&G' 2-' -A5'
?2E5' -'E5' 2&C' +44&' -4' -A5' +12$5' H&'GA-' @A':A' A5'
?A4* F' F5E2&F' 641' A'E?5 6' A5' 2--51' '&' 15-*1&'
?'ED C' 15M*5?-5F' -A2-' A'?' 4 F' :4E12F5' $5?' F0 !UG15'
?A4* F' +5 15:2 5F' 614E' 5J' 5' A'?' -12'-' 46' E2G&2B
&'E'-C(' @A5&' :4&-12?-5F' @'-A' -A5' G5&512' 6514:'-C' 46'
-A5' -'E5?(' A2?' ?4E5-A'&G' '&' '-' '&5JD15??'+ C' D 52?'&G'
-' ?A4@?(' 'H5' 4-A51?' 15:41F5F' 46' -A5' 15&:A' G5&- 5B
E5&' 46' -A2-' D51'4F(' -A2-' -A5' 2G5' 46' :A'$2 1C' > '
-A5' :A'$2 1C' 46' 14E2&:5(' '&F55F(> UA2F' &4-' @A4 C'
D2??5F' 2@2C 9

A5' D2:'6':2-'4&' 46' C4&?' ?52 5F' -A5' 62-5' 46' 2B
D 5?'N' 2&F(' @A' 5' '-' -51E'&2-5F' -A5'@21?' '&' -A2-'H'&GB
F4E(' :4?5F' -A5' E' '-21C' :2155' 46' 4&?2 $4' F5' 41B
F4$2' -' '?' 'ED4??'+ 5' -4' :4&-5ED 2-5' -A5' E2G&'B
-*F5' 46' -A5' 15?* -?' 2:A'5$5F' @'-A' ?*:A' ?5&F51' 15B
?4*1:5?(' 2&F' '&' -A5' 62:5' 46' ?*:A' 4$51@A5 E'&G' 4FF?('
@'-A4*-' F55D' 2FE'12-'4&' 641' -A5' G5&'*?' 46' -A5' E2&'
+C' @A4E' -A5C' @515' 2::4ED '?A5F

1' $ + ' ' +'##' # ' $>$ /'&?' JJ' ' ?'" /'
&' J#' A +' /' $ " ' D #"? ' U' $ ' - ' ' $ ' =
&?' :' $-' ' / ' +' +' - &? V' +$/' ' *' ?#' # L
J'#' A' $&& $#' #$ # ' -' -#/' # ' 0$ /' ?$'# "' ! # /'
3@ A 8$# $ /' #'$ # ' /' ' ' # ' /(' $* ' ? ' &$-# $L
/(-' +'#' ' --' F@@' A'FBE' # ' *'8$ $
' $ ' + # ' /' ? '$L

'?' ?*::5??(' -' '?' -1*5(' '?' 'ED*-2+ 5' '&' D21-' -4' -A5'
?'G&2' 51141?' 46' A'?' 2F$51?21'5?' A5' E2G&'6':5&-'
5JD5F'-'4&' 46' A21 5?' ' 62' 5F' -4' D14F*:5' $ >'
D51E2&5&-' 'ED15??'4&(' :A'56 C' '&' :4&?5M*5&:5' 46'-A5'
D15:'D'-2-'4&' @'-A' @A':A' '-' A2F' +55&' 5&-515F' '&-4('
@'-A4*-' ?*66':'5&-' :4&:51-' @'-A' -A5' -2 '2&' ?-2-5?('
@A4' :152-5F' 2'641E'F2+ 5' 5&5EC' @A5&' *&'-5F' '&' A'?'
1521' 5' F'F' &4-' 5$5&' 2$2' ' A'E?5 6' 46' A'?' -5ED4B
121C' 2:M*'?'-'4&' 46' 2D 5?' -4' G2-A51' ?*DD41-' 614E'
-A5' 2--2:AE5&-' 46'A'?' &5@' ?*+,5:-?' 21'614E' '&:41B
D412-'&G' @'-A' -A5E(' A5' @2?' 15G21F5F' 2?' 2'6415'G&51'
2&F' 2&' 5&5EC(' 2&F' 2?' ?*:A' 5JD5 5F' +C' -A5' ,4'&-'
2:-'4&' 46'2 ' -2 C' 614E'-?' +4?4E(' 2?' ?44&' 2?' '-' A2F'
15:4$515F' ?*66':'5&-' ?-15&G-A' -4' 12 C

4*'?' Z ' D146'-5F' +C' -A5' 51141?' 46' A'?' D15F5:5?B
?41' '?' 2:M*'?'-'4&?' '&' -A5' ' 2&5?5'641E5F' 2' +2?'?'
641'6*-*15' 4D512-'4&?' N 2&F' +C' &5G4-'2-'4&' 2&F' 4-A51B
@'?5' A5' ?5:*15F' -A5' 2 '2&:5' 2&F' -A5' '&-515?-?' 46'-A5'
$21'4*?' -2 '2&' G4$51&E5&-?' 4&' A'?' ?'F5' A5?5' D15B
'E'&21C' 2' 2&G5E5&-?' @515'64 4@5F' +C' D15D212-'4&?'
5$51C' @2C' :4EE5&?*12-5' @'-A' A'?' 4+,5:-' 5' 62' 5F'
'&' -A5' 6'1?-' :2ED2'G&(' A4@5$51(' +C' '&-1*?-'&G' -A5'
:4EE2&F' -4' '&:4ED5-5&-' A2&F?(' :4&?* -'&G' +'1-A'
12-A51' -A2&' -2 5&-' 41' 5JD51'5&:5

&' -A5' ?*::55F'&G' :2ED2'G&?(' A'?' 62' *15(' -A4*GA
D21- C' :A21G52+ 5' 4&' A'E?5 6(' @2?' 5??' ?4' -A2&' 4&
:'1:*E?-2&:5?' +5C4&F' A'?' :4&-14 ' A5' 6'1?-' 46'-A5?5
@2?' -A5' 4&G' F5-5&-'4&' 46'-A5' 21EC' +56415' 4E5' +C'
21F'&2' F0 E+4'?5(' 2&F' '-?' :4&?5M*5&-' 5JD4?*15' -4'
-A5' *&5J2ED 5F' ?5$51'-C' 46' -A5' 5&?*'&G' @'&-51N 2

; ; = 8 : (' '

?5 : 4&F' @2?' -A5' 612 * F * 5&-' : 4&F * : -' 46' -A5' : 4 E E '?B ?21'5?('&6511'&G' &4' F4 * + -' ?4 E 5' F5G155' 46' &5G 'G5&: 5' '&' -A5' D51?4&' @A4' 2DD4'&-5F' -A5 E N' 2&F' 2?- C(-A5' $2&-' 46' 2' ?* '-2+ 5' : 4 E E 2&F51.'&. : A'56' 46' -A5' 21 E C ' 2' 15 E 4 * ' 5' +5'&G' ' (2&F' 0 * + 'G&C' 2' D1'?4&51' '&' -A5' A2&F?' 46' -A5' 5&5 E C(-A515' 2DD5215F' &4' 4&5' 2 E 4&G' -A5' 15&: A' M * 2 '6'5F' -4' : 4D5' @'-A' -A5' D2&B '?A' G5&512 ' A5' 21M * '?' 46' 2&- * 2('&F5D5&F5&- C' 46' -A5' F'?2F$2&-2G5' 46' +5'&G' 2' 6415'G&51(@2?' -44' -' E 'F' '&' : 4 * &: ' ' 2&F' F' 2-41C' '&' : 4&F * : -' -4' +5' 2&C' @2C' : 4 E D5-5&-' -4' -A'?' F'66' : * -' -2?H

6' A'?' 5&5 E '5?(A4@5$51(: 4 E E '--5F' G152-' M1141?('-' '?' 2 -4G5-A51' 4@'&G' -4' 4&?26$4' -A2-' A5' @2?' '&' 2' ?'-* 2-'4&' -4' -2H5' 2F$2&-2G5' 46' -A5 E ' 4-A'&G' : 4 * F' +5' E 415' * &D14 E '?'&G' -A2&' A'?' D4?'-'4&' 4&' 6'1?-' 5&B -51'&G' 2 2+1'2 ' ' '-21C' 4D512-'4&?' A2F' +55&' : 4&B F * : -5F' '&' D2'&' 4&' D1'&: 'D 5?' -4-2 C' F'66515&-' 614 E' -A4?5' @A' : A' D15$2' 5F' '&' -A5' 15?-' 46' * 14D5 ' A'?' @2?' 5?D5 : '2 C' -A5' : 2?5' '&' -A5' 2-5' 441'?A' @21?(@A515' -A5' 4 F' -2 : -' : ?' 2&F' -A5' : A212 : -51' 46' -A5' G14 * &F' +14 * GA-' 'GA-' : 2$2 1C' : A'56 C' '&-4' * ?5 ' A'?('&F55F(: 4&?-'-* -5F' A'?' D1'&: 'D2 ' ?-15&G-A' 2-' -A'?' D51'4F' N' 641' A'?' '&62&-1C(-A4 * GA' 2 : : * ?-4 E 5F' -4' '115G * 21' ?51$': 5(@2?' '&F'66515&- C' 21 E 5F' 2&F' F'?: 'D '&5F ' &' 'E B D41-2&-' 15$4 * -'4&(A4@5$51(A2F' 4 : : * 115F' '&' -A5' 4-A51' D21-?' 46' * 14D5 ' A5' '&62&-1C' A2F' -A515' 15B G2'&5F' -A5' ?* D51'41'-C' @A' : A' '-' E 2'&-2'&5F' '&' -A5' F2C?' 46' -A5' 155H?' 2&F' 4 E 2&?' A5' 5JD51' E 5&-' A2F' +55&' E 2F5' (4&' E 415' -A2&' 4&5' + 44FC' 6'5 FN' 2&F' '-' @2?' 64 * &F' -A2-' -A5' ?4 'F' : 4 * E &?' 46' @'??' 2&F

51E2&' D'H5?' &4-' 4& C' +415' F4@&' 2 ' 4DD4?'-'4&' '&' -A5'1' 4&@21F' E21:A(' +*-' D15?5&-5F' 2&' 'ED15G&2+ 5' +211'51(' A4-' -4' +5' ?A2H5&' +C' -A5' E4?-' F5?D512-5' :A21G5?' 46' -A5' +5?-' A52$C.26E5F' :2$2 1C ' -' @2?' 2G2'&?-' -A5?5' F152F5F' +2--2 '4&?' -A2-' 4&?2 $4' @2?' D4@' :2 5F' -4' E52?*15(' 641' -A5' 6'1?-' -'E5(' -A5' +4 F(' +*-' 1*F5 C.21E5F' 2&F' :4ED212-'$5 C' 12@' 15:1*'-?' 614E' 2 ':'2' 2&F' -A5' ?-*1'2?

5' 4?-' A'?' 6'1?-' +2-- 5(' '&-4' @A':A' '-' ?A4* F' +5' 15E5E+515F' A5' @2?' D15:'D'-2-5F' 2G2'&?-' A'?' @' ' 5' D14:55F5F' 26-51@21F?' @'-A' -A5' G152-5?-' :2*-'4&(' G12F*2 C' 62E' '21'L'&G' A'?' E5&' @'-A' -A5' 2?D5:-' 2&F' *?2G5?' F6' -A5' 5&5EC' -A5C' A5 F' '&' ?*:A' 2@5(' +56415' +1'&G'&G' -A5E' 2G2'&' -4' 2' F'15:-' 5&:4*&-51 ' 5' D*-' A'E?5 6' -4' ?:A44 ' F*1'&G' -A'?' @A4 5' :2ED2'G&(' :215.(' 6* C' 2:M*2'&-'&G' A'E?5 6' @'-A' -A5' -2:-':?(' F'?:'D '&5(' 2&F' &4$5 ' 21E?' 46' A'?' 5&5E'5?(' 2&F' +4114@'&G',*?-' ?4' E*:A' 2?' A5' :4* F' '&:41D412-5' '&-4' -A5' 2&:'5&-' ?C?-5E' 46' -A5' D2&'21F?(' @'-A4*-' F'?:21F'&G' -A5' 2-B -51' 2 -4G5-A51 ' A*?(' @A' 5' A5' 15-2'&5F' -A5' ?AD1-' ?@41F' 2&F' +*:H 51' 46' A'?' :4*&-1CE5&(' A5' 641-'6'5F' A'?' +2--2 '4&?' @'-A' 2' 21G5' &*E+51' 46' ?D521E5&(' 26-51' -A5' 51E2&' 62?A'4&' A5' 2112&G5E5&-' '?' A'GA C' :4EE5&F5F' +C' -A5' ?2G2:'4*?' 2:A'2$5 '(' @A4' :4&B ?'F51?' '-' 2?' :4E+'&'&G' -A5' 2F$2&-2G5?' 46' +4-A' ?C?B -5E?' N' ?'&:5(' @A' 5' -A59' 4&G' ?D521' ?51$5F' 2 ' -A5' D*1B D4?5?' 46' 15?'?-2&:5(' 41' 5$5&' 46' 2--2:H' 4&' 5$5 ' G14*&F(' -A5' ?A41-' ?@41F?' 2&F' -21G5-?' 5&2+ 5F' -A5'1' @52151?(' 2?' 2 152FC' &4-':5F(' -4' :*-' '&' *&F51' -A5' F5&?5' 2112C' 46' A4?-' 5' D'H5?(' 2&F' +1'&G' -A5' 5&5EC' -4' :4?5

; ; ‘ 0 ‘ ‘ !

M*21-51?(‘ @A515‘ A'?’ 641E'F2+ 5‘ @52D4&‘ @2?’ 46‘ &4‘ $'$# I

A' 5‘ 4&?2 $4‘ E2F5‘ -A'?’ '&&4$2-'4&‘ '&‘ -A5‘ 21E?’ 2&F‘ -2:-':?(‘ A5‘ D2'F‘ 5M*2 ‘ 2--5&-'4&‘ -4‘ -A5‘ 641E2-'4&‘ 46‘2‘ ?*'-2+ 5‘ :A212:-51‘ '&‘ +'?’ ?4 F'51C‘ A5‘ :'1:*EB ?-2&:5?’ '&‘ @A':A‘ A5‘ @2?’ D 2:5F‘ 2-‘ 21 5-2(‘ 2&F‘ +&‘ -A5‘ 21'G '2&4(‘ 'ED512-'$5 C‘ F5E2&F5F‘ -A'?’ '-AB 4*-‘ 644F(‘ : 4-A5?(‘ 41‘ D2C(‘ @'-A4*-‘ -A5‘ :A2&:5‘ 5$5&‘ 46‘ 15-1'5$'&G‘ A'?’ F5?D512-5‘ :4&F'-'4&‘ +C‘ $5&-*1'&G‘ 2‘ + 4@‘ 2-‘ -A5‘ 5&5EC(‘ -A5‘ D2&'?A‘ ?4 F'51‘ @2?’ 15M*'15F‘ -4‘ 15E2'&‘ D2??'$5‘ 4‘ F4‘ -A'?(‘ F5E2&F5F‘ D2-'5&:5(‘ 2+?-'&5&:5(‘ ?-1':-‘ ?*+41F'&2-'4&(‘ 2&F‘ 2‘ F5G155‘ 46‘15?4B *-'4&‘ 621‘ A'GA51‘ -A2&‘ -A2-‘ 15M*'15F‘ -4‘ :4E+2-‘ 4+B ?-2:5?(‘ A4@5$51‘ 641E'F2+ 5‘ '&‘ -A5E?5 $5?(‘ @A515‘ 2:-'$5‘ 5J51-'4&(‘ @A':A‘ -2?H?’ -A5‘ *-E4?-‘ 5&51G'5?’ 46‘ -A5‘ ?4 F'51(‘ 15&5@?’ A'?’ ?D'1'-?’ 2&F‘ 12'?5?’ -A5E‘ -4‘ 2‘ :4&-5ED-‘ 46‘F2&G51‘ -‘@2?’:2 '&G‘ 4&‘A'E(‘ '&‘ ?A41-(‘ -4‘ +5G'&‘ @'-A‘ 2:A'5$'&G‘ -A2-‘ E4?-‘ F'66':* -‘ 46‘2 'UC':.‘ -41'5?(‘ -A5‘ $':-41C‘ 4$51‘ A'E?5 6

‘ -A'?’ -A5‘ D2&'?A‘ :4EE2&F51‘ 5665:-5F‘ 5‘ '&6*?5F‘ '&-4‘ A'?’ E5&‘ 2‘ D41-'4&‘ 46‘A'?’ 4@&‘ '&$'&:'+ 5‘ 5&51GC‘ 5‘ '&?D'15F‘ 2‘ 4$5‘ 46‘A'?’ D51?4&(‘ @A':A‘ 5F‘ -A5E‘ -4‘ 5E* 2-5‘ A'?’ 5J2ED 5M‘ 2&F‘ 2‘ :4& F5&:5‘ '&‘ A'?’ G5&'*?’ 2&F‘ 15?4*1:5?(‘ @A':A‘ ?*DD41-5F‘ -A5E‘ *&.

I‘ $&?#$' #‘ (‘ ‘/ L / -‘ $ D‘ *‘ ?‘ G# ‘ - $L $‘ 8 $‘ #0‘ ## A $&?#$' # + ‘ 0 "?‘ ? +‘ ‘ & ‘ & #/ ‘ ?‘ '#& >‘ ' ‘ 0 =‘ & +0$ ‘ G? ‘ ?‘ * + ‘ ?$/‘ 0#" >‘$‘ +# $$$‘#+- $0 ‘ ?‘G? ‘$/'$ $" ‘ ? ‘ #‘$‘" $‘/ " ‘ ‘ ?‘- & #$‘ # $&‘ *‘ ?‘ $ /‘ && /‘ $ + ‘ *‘ ?‘ -$ #$ / ‘ G? ‘ $‘ ?‘+ + $0‘0$ ‘ *‘ $L G# ?‘ ?#‘ ? ‘ G /‘$ /‘ ' $‘ + ‘ > $ ‘ $ ‘ &‘ ?# / ‘ "#/# "‘ #‘ $+ "‘ ? &#

F51 2 -A5'1 D1'$2-'4&? +C -A5 6'1E 15 '2&:5 4& 2 641B -*&2-5 '??*5 '? E2&&51? @515 F'?-'&G*'?A5F +C 2 G12:56* :4*1-5?C(" 5?? 5&:*E+515F @'-A 5-'M*5--5 -A2& *?*2 @'-A D51?4&? 46 A'? A'GA 12&H '& 2?-' 5 5 H&5@ @5 -A5 D14*F 2&F '&F5D5&F5&- 655 '&G? 46 -A5 D2&'?A ?4 F'51(2&F(621 614E 2&&4C'&G A'E +C *&&5:5??21C 15?-12'&-?(?A4@5F -A5 E4?- '+512 '&F* G5&:5 2- 2 -'E5? *-A'? H'&F&5?? @2? -5EB D515F @'-A ?5$51'-C(@A':A F'?D 2C5F '-?5 6(4& ?*:A 4::2?'4&? 2? 15M*'15F '&-51D4?'-'4&('& 2 E2&&51 -A2- 1215 C 62' 5F -4 15D15?? 5$51C -A'&G 'H5 '&?*+41F'B &2-'4& A5 152F51 @' 152F' C 15:2 2& 5J2ED 5 46 -A'? '& -A5 E*-'&C +56415 212&-4 2&F '- @2? F4*+- 5?? +C -A5 2??51-'4& 46 ?'E' 21 D4@51(-A2- A5 @2? ?4 4&G 2+ 5 -4 H55D '&:A5:H A'? 51E2& E51B :5&21'5?(F'?-'&G*'?A5F 2+4$5 -A5 -144D? 46 5$51C 4-A51 &2-'4& +C -A5'1 A2+'-*2 ':5&?5(2&F :4&-5ED- 46 2*-A41'-C

A' 5 4&?2 $4 15 '5F ?4 6155 C 4& -A5 A21FC :4&B ?-'-*-'4& 2&F D2-'5&- A2+'-? 46 -A5 D2&'21F?(A5 -1*?-5F &4 5?? -4 -A5 F56':'5&:C 46 -A5?5 M*2 '-'5? '& -A5 15&:A(@A4(*& 'H5 -A5 21-'6':'2 :A212:-51 641E5F *&F51 -A5 ?-51& -12'&'&G 46 2-51 -'E5?(15B ?5E+ 5F -A5'1 2* '?A 2&:5?-41? '& -A5 62:' '-C @'-A @A':A -A5C @515 F'?:4*12G5F +C *&5JD5:-5F 4+.(-2:'5?(2&F -A5 F'66':* -C @'-A @A':A -A5C :4* F +5 +1D*GA- -4 12 C 9 &-A'? A5 F'F &4- E'?:2 :* 2-5

]' #+$V' $>' #'>'-# ?#L - **# #$ - ', $+''# +'- =' >' - $D# '" *' ?'8$ '#' ?' +$ +# ', $+'* +# $ +R #+' *' ?' - 0#&'U + #0 J'&$- JJ'###

; ; S 0 !

A5 15&:A '&62&-1C(F12@& 614E -A5 E ' '-'2 46-A5 :4*&-1C(A2?-' C :4 5:-5F 2&F ?44& -4 +5 F'?+2&F5F((2&F -A5 '&F5D5&F5&- &4+' '-C 2&F G5&-1C @A4 :4E. ,74?5F -A5 :2$2 1C ?51$':5(@515 2 'H5 F'6 :* - -4 +5 +14*GA- @'-A'& -A5 ?-1':- :*1+ 46 E ' '-21C 1* 5 A5 ?5$515 -1'2 ?(@A':A ?-55 5F -A5 ?4* ? 2&F G2$5 ?'&5@C ?-15&G-A -4 -A5 :4&?-'-*-'4&? 46 -A5 D2&'?A ?4 F'51?('ED2'15F -A4?5 46-A5'1 5&5E'5?('&-14F*:5F F'$'?'4&? '& -A5'1 :4*&:' ?(2&F 15 2J5F -A5 @A4 5 -4&5 46 F'?:'D '&5 4&?2 $4 @2-:A5F -A5 4D512-'4& 46 2 -A'?(2&F :44 C @2'-'&G -A5 E4E5&- @A5& A'? @521C 2&F F'?A521-5&5F 2F$51?21C ?A4* F +5 -A14@& 466 A'? G*21F(:4 5:-5F 2 A'? ?-15&G-A 641 2 F5:'?'$5 + 4@ +C @A':A -4 -51E'&2-5 -A5 2:-'4& *:A @2? -A5 A'?-41C 46 -A4?5 E5E412+ 5 :2ED2'G&? @A':A : 4?5F @'-A -A5 +1' '2&- $':-41'5? 46 51'G&4 2 2&F -A5 21'G '2&4

& 2 15$'5@ 46 A'? E ' '-21C :4&F*:-(@5 E*?- &4- 4$51 44H A'? D4 '-': F5D41-E5&-(-4@21F? -A5 -2 '2&?(2 -4G5-A51 -A5 15$51?5 46 -A5 :215 5?? 2&F '&?4 5&- +521'&G 46-A5 15&:A 5 2$2' 5F A'E?5 6 '+512 C 46 -A5'1 ?*D51'41 ?:'5&:5(?A4@'&G G152- F56515&:5(2&F :4&6'F'&G -A5 E4?- 'ED41-2&- -1*?-? -4 -A5'1 466':51? 9 21 614E -A5 15?51$5 *?*2 C ?A4@& -4 6415'G&51?(A5 2DD5215F '&?5&?'+ 5 -4 &2-'4&2 F'?1 -'&:-'4&?(2&F 21F5&- C5E+12:5F -A5E 2? :4ED2&'4&?

G * ? + /# # = +## $ > - $ # * ? $ " # ? /* ? G ? = # ? *$& ?$? # & /0> $ - $ /* $0 #&# $&?#$' # $? - # &#-$ # = *G? +* * , + # ?$ & # ? # #$ " 0 +$/ # $ $ #' ? * > , ? 0 & ++ $ > ?

'& 21E? 5E+21H5F '& 2 :4E E4& :2*?5 @'-A A'E?5 6 &-A5'1 -4*1&5C @'-A -A5 15&:A +56415 21 5-2(-4 @A':A -A5 @A4 5 &2-'4& 2--2:A5F ?*:A 'ED41-2&:5 2? 2 $'&F':2-'4& 46 &2-'4&2 A4&4*1(-A5C @515 5&-'15 C ?*DD41-5F +C 4&?2 $4(@A4 6*1&'?A5F -A5E @'-A 21E?(?5:*15F 2 62'1 6'5 F 46 6'GA-(2&F ?A215F -A5 -1'*EDA 46 -A5 $':-41? 2? -A2- 46 A'? 4@& :4*&-1CB E5&(> D2C'&G -A4?5 F5 ':2-5 2--5&-'4&?(@A':A :4?- 621 5?? '&F55F(+*- -4 2& A4&4*12+ 5 E'&F 215 46 G152-51 $2 *5(-A2& E415 ?*+?-2&-'2 +5&56'-? 5 :4&:' '2-5F -A5 G44F.@' 46 -A5 -2 '2& ?-2-5? +C $21'4*? 'ED41-2&- ?51$':5? N 46 -A5 5&5-'2&?(+C A'? G2 2&- F565&:5 46 -A5'1 D4??5??'4&? '& -A5 5$2&-N 46 -A5 D54D 5 46 4E5(+C F5 '$51'&G -A5E 614E -A5 D'12-5? 46 ?-'2N @A' 5 A5 ?*::55F5F(&4-@'-A?-2&FB '&G -A5 5J:5??5? 46 A'? ?4 F'51C('& :2D-'$2-'&G -A5 G'FFC 52D4 '-2&? -4 ?*:A 2 F5G155(+C A'? 2662+ 5 E2&&51? 2&F ?D 5&F'F ?-C 5 46 '65(2? ?55E5F -4 5662:5 614E -A5'1 E'&F? 5$51C 15:4 5:-'4& 46 -A5 2?- 2&F E4?- D4D* 21 46 -A5'1 E4&21:A?(-A5 *&641-*&2-5 15F51':

A5 F'?-2&:5 46 4&?2 $40? -A52-15 46 4D512-'4&? 614E A'? 4@& :4*&-1C(2DD215&- C E4?- F'?:4*12G'&G(D14$5F 5J-15E5 C 62$4*12+ 5 -4 A'? D*1D4?5? A5 -144D?(:*- 466 614E 15-152- +C 2 @'F5 ?52 2&F 2& 'ED2??2+ 5 E4*&-2'& +211'51(A2F &4 2 -51&2-'$5 +*- -4 :4&M*51 41 -4 F'5 A5'1 4&G :4&-'&*2&:5 '& -A5 6'5 F @'-A4*- F'?+2&F'&G G2$5 -A5E 2 -A5 ?-51&('&6 5J'+ 5 M*2 '-'5? 46 2 ?-2&F'&G 21EC N 2&F 2? -A5C ?51$5F -A14*GA ?4 E2&C ?*::5??'$5 :2ED2'G&? *&F51

; 8 : (' '

-A5' +2&&51' 46' -A5' ?2E5' 52F51(' -A5C' @515' F1' 5F' '&'
2' ?C?-5E' 46' -2:-':?' 621' ?-52F'51' 2&F' E415' *&'641E'
-A2&' :4* F' +5' 2:M*'15F' *&F51' 2' $21'5-C' 46' :4E.'
E2&F5'0?(' A4@5$51' 2+ 5' !&F51'-A5?5' :*0:*E?-2&:5?('
@A':A' ?4' @5 ' 6'--5F'-A5E' 641' 15:5'$'&G' '12D15??'4&?,'
-A5' D2&'?A' 2112C' @2?' G12F*2 C' E4* F5F' '&-4' -A5'
641E' F5-51E'&5F' +C' -A5' @' ' 46'-?' G152-' :A'56

A5&' @5' 44H' 2-'-A5' 2E4*&-' 46'641:5?' 2-'-A5' F'?B
D4?2' 46' 4&?2 $4(' '-' 2DD521?' ?4' D2 -1C(' 5?D5:'2 C'
:4ED215F' @'-A' -A5' G'G2&-':' 2DD212-*?' 46' 2-51' @21?('
-A2-' '-' E2C' @5 ' ?*GG5?-' F'?D212G'&G' 'F52?' 46' -A5'
@A4 5' :4&-5?-' 4' ,*FG5':4115:-C(' @5' E*?-' F'15:-'
4*1' 5C5?' -4' -A5' 15?* -' '-A' -A'?' '&?'G&'6':2&-'641:5('
@5' ?A2 ' -A5&' ?55' -A5' H'&GF4E' 46' 2D 5?' :4&M*515F('
2&F' -A5' +5?-' G5&512 ?' 2&F' 21E'5?' 46' 12&:5' 2&&'A'B
2-5F' 2&' 'ED41-2&-' '&&4$2-'4&' 5665:-5F' '&' E' '-21C'
?:'5&:5' -A5' 21-' 46'E'&'&G(' '6'&4-' '&$5&-5F(':211'5F'-4'
*&D15:5F5&-5F' D5165:-'4&' ' 2' -A414*GA' 15641E' '&-14B
F*:5F' '&' -A5' 2112?' 2&F' F'?:'D '&5' 46'-A5' D2&'?A' ?4 B
F'51' 2&F' -A5' 41G2&'L2-'4&' :4ED 5-5F' 46'-A2-' $2 '2&-'
'&62&-1C(' @A':A' '?' A4&5?- C' 5* 4G'L5F' +C' 2' 15&:A'
@1'-51' 2?' '115?'?-'+ 5' '&' 2--2:H(' 2&F' 'ED4??'+ 5' -4'
14*-' 9' 2&F' @A':A' :211'5F' -A5' +2&&51?' 46' D2'&'
$':-41'4*?' 641' E415' -A2&' 2' :5&-*1C' 4$51' -A5' E4?-'
F'?-2&-' D21-?' 46' *14D5

I' ' 0 ' 6# ' / ' $' ' ?'&?$ $& ' *' ? ' 0 $' '
#" ' / ' $+0 $>' # ' L - ' $' #+# $' $# ' *'
#+' -' BE A ?#' &?' G # ' -$ "> #&' * +' ?' &?#'$ '
?$' ? G' ?#+ *' - ' ' - ' *' /' $ + ' ' '
$# $'/# # & # '# ' ?' #0 L +'#' # &'JJ'##
$' #+ >' G?#&?' ?' 0 $

; ; 8 : ⍁ ' '

#&?' /' -$ # ?' &? #& ' J?#0# # '" + ' *' # ' &?$ $& # #&
0 +# ? ' G# ?' $' ' >' +$ ' $/ +#J ' *' # ' 0 $ # ' ? ' "
$ /' - >' $ $ #' '# ' ' $/ /' G# ?' ? ' + ' * #' ' / $# '
+ - /' * ?' # ' $' $# ' *' " #*#&$ # R G?#&?' + #+ ' R/# L
*#" ' + ' + # # ' & + - # # ' # ' ? ' $ # #$ ' ?# "
#D ' /# & #+# $ # ' *'&?$ $& ' *'& ' # ' ' 0 ' D /' * '# ' ? '
'$ >#" G ' *' -$ "> #&' G?#&?' & $#+ ' * ' # ' 0! & ' $ ' ? '
J $'$"$ ' * #"? ' *' $' ? ' *' +$ & ' 7 # ?' ? ' / / & # '
? G ' ' $ /' $' #0 $ ' $ G$ & ' & , >' * ' ? ' $ # $ # >'
*' ? ' G D ' # ' ?$ ' & #/ $0 ' '$ ' $ ' $' & /' *' ' ' ' & '
' ? # ' && & ' ' 0 ' # >' / *$& /' 0>' ? ' / - ' $# ' *'
' G?#&?' $ ' ' $- ' ' ' ' ? ' G $? =0 $ ' + + '
*' $ #, # >' ' ?$ ' $&& /# " >' * + /' $' - # &#-$ ' " ' *' ? '
U' : #/ $' / ' 8 $ ' $-# $ V' # / & /' 0>' ; # $ $' # ' ? ' *# '
' + ' *' ' H' -$ ' 0 V' - # /' $ ' $/ #/ ' 23E) '
?# ' + + # ' # ' G?#&?' ? ' # &#/ ' $ ' & /' G# ?' /# & L
+ ' /# - $> ' ? ' $ ' * / +' $ /' '#' $&# >' *' # ' - #&' $? '
R ' / ' ' 0 # '" ? ' " $ ' - # #& ' *' ? ' - # /' #+ / ' '# G '
0 ' G# ' ' 0 ' * /' / *#&# ' # ' -$ #& $ ' ?$ '# '" #+ + /#$ '
& #+ J# ' G# ?' ? ' - $ ' ?# >' *' # ' 0! & ' $ /' ' ? '
G? ' J?#0# ' # ' $ ' $M $0 ' $ /' & + - /# ' * +' G?$ ' '# '
*' + ' # ' '#+ - $ & ' * ' ? ' " $ ' $/
? ' &?' ?$' ' $ ' $' U' 6# # ' / ' 8 $ ' ' / ' / V'
& + - /' 0>' $? ' - & ' $' P # ' # ' G ' ' 2F + ' $ # '
2)2(' ? "?' $ ' $+0# # ' # ' # ' $' 0 " # '" - * +$ & ' + '
#+ D# * >' - ' " ? ' $ /' & $# ' , # ' $ ' + &?' *' G?$ ' # '
? ' /#/' ' / ' $ ' G?$ ' ? ' /#/ ' ? ' - #J# >' *' ? ' $ $ #' '# '
' ' ' # ' /' 0>' ?$ ' -#, $ &>' *' > ' G?#&?' * + ' + L
?# '" #D ' $' 0 # ' * ' ? "? ' # ' +$ >' *' ? ' G ' / ' *'
&?' ?# #$ ' '# ' ' ' ?# >' ? G ' ' ?$ ' ' +$ & '
?$ ' ? ' &?' - 0 #&' # ' # / 0 /' * '# '& & - # ' *' ? ' &?$ $&L
' *' 8 $ ' ' / ' / '$' $ ' / -#& /' 0>' ? ' "$ />' - &#' *' =
#$ ' # ' ?$ ' ?#"? >' - #& & # " ' G?#&?' # ' + ' $ $& #' '
' ? ' +$! # >' *' $/ ' ?$ ' ? ' & /' $ /' 0 ' / # $ # ' *'
?'
⍁
? ' & + - $ >' &?' $&& ' *' ? ' $- # $ ' G$ ' *'
' H ' $ ' J + >' + $" ' $ /' * G' # ' +0 ' ? ' + '
#D# " ' ' ? ' G? '# ' ⍁ ⍁ ' ? #& '& + - /' # ' ? '

/ 8 : (' '

&$ & >' 0 ' -- /' ? G ' ' ?$' ? ' $0 ' *' ?#' $ >' $ #L , $ >' J?$ /' ? ' / -$ + ' # ' G?#&?' ? ' &?' $ ' #&?' 0 L > /' $ ' ? ' $ /' ?$' ? ' G? ' G D' ? ' $+ ' +# ' ? $* ' ? /' ' *# /' '$ $0 ' +$ #$ ' * ' $' 0 $/ ' * /$ # ' *' ?# ' # # '" - # ' *' ? # ' ?# >

' # ' * $ ' ?$' ? ' ' ' *' ? ' &?' # ' "$ /' ' ? # ' $ # ' G# ?' $ >' $ ' ?# ' #+ ' ?$' 0 ' $0 /$ >' & + - L $ /' 0>' ? ' $0 ' *' ? ' + ' +# ' & + - $ >' G # ' *' ? ' $ ' & >' $ ' +0 ' $&?#$' #' 8# '# ' $ /' ? ' -?# L -?#&' 8 #&&#$ /# #<' G? ' # $ # ' $ ' $ #$ ' $0 /' ? +' ' +$# / +' ? ' 0$ $ & ' *' ?# #&' ?' /# 0 / ' $ ' $ ' 0>' #+ / ' -$ #$ # >' * ' # ? ' *' ? ' G ' " $ ' #'$ ' - G <' G? ' ?#"?' - 0 #&' $ # ' # / & /' ? +' ' ? ' - # &#-$ ' &?$ $& ' *' ? ' /$>' $ /' ' - # " ' *' $& # ' ?#/ / ' * +' ' "$ ' > I<' $ /' G? ' - # ' &# & ' $ ' G ' $ ' " # ' , $ #*# /' ? +' * ' # # '" $0 ' ' ? ' ? +0 ' ' ' *' "$ ' &? #& ' $ /' + + # ' ' ? ' & $ #&' /#" # >' *' ?# >' ' # ' G# ?' " ' ?$ ' G ' + ' G' #D ' # ' $' $&D' #+# +# /' 0>= ? ' $0 ' *' ? ' " $ ' +$ L ' *' ? # ' $ ' # ' + / +' #+

;

' Z

' ' 6' ' == 6 ' 6 L

< =

$ ' 2:M*'?'-'4&' 46' 2&' 'ED41-2&-' H'&GF4E' '&'-A5' A521-' 46' *14D5(' 2&F' 46'-A5' 5@' 41 F' +5C4&F'-A5' @2-51?(' @A':A' D14E'?5F' -4' D4*1' '&-4' A51' 2D' 2 '-A5' 62+ 5F' -152?*15?' 46' -A5' &F'5?(' @2?' 12D'F C' 12'?'&G' D2'&' -4'-A5' 6'1?-' 12&H' 46' *14D52&' D4@51?' *-' '&' -A'?' &44&-'F5" 46' A51' ?*::5??' ?A5' @2?' -4' 5JD51'5&:5' 2' 62-2' ?A4:H' '&' -A5' 4??' 46'-A2-' ' *?-1'4*?' D51?4&2G5' @A4' A2F' ?4' 4&G' 2&F' ?4' G 41'4*? C' D15?'F5F' 4$51' A51' F5?-'&'5?' 5' A2$5' A2F' 4::2?'4&' -4' &4-':5' E415' -A2&' 4&:5' -A5' F5: '&'&G' ?-2-5' 46' -A5' M*55&0?' A52 -A' F*1'&G' -A5' 2?-' 65@' C521?' 51' :4&?-'-*-'4&' A2F' +55&' G152- C' 'ED2'15F' +C' '&:5??2&-' D51?4&2' 62-'G*5?' 2&F' 5JD4?*15(' 2&F' +C' -A5' *&15E'--'&G' 2:-'$'-C' 46' A51' E'&F' -' A2F' ?*66515F' 621' E415' ?5$515 C(' A4@5$51(' 614E' 2' ?51'5?' 46' A52$C' F4E5?-':' :2 2E'-'5?(' @A':A' A2F' 62 5&' 4&' A51' @'-A' '-- 5' '&-51E'??'4&' ?'&:5' -A5' F52-A' 46' A51' E4-A51' '&' <= ' A5' &5J-' C521(' ?A5' 64 4@5F' -4' -A5' G12$5' -A5' 15E2'&?' 46' A51' 4& C' ?4&(' -A5' A5'1' 2&F' A4D5' 46'-A5' E4&21:AC0' ,*?-' 5&-51'&G' 4&

A'? D1'E 5 2&F('& -A5 ?*::55F'&G(@2? :2 5F 4& -4 15&F51 -A5 ?2E5 ?2F 466':5? -4 -A5 +5?-.+5 4$5F 46 A51 F2*GA-51?(-A5 2E'2+ 5 b*55& 46 41-*G2

A5 ?5$515 ' &5?? 4::2?'4&5F +C -A'? 2?- + 4@ -51E'&2-5F '& 2 F5,5:-'4& 46 ?D'1'-?(614E @A':A ?A5 &5$51 5&-'15 C 15:4$515F 51 ?*1$'$'&G :A' F15& @515 15E4$5F 621 614E A51 '&-4 F'?-2&- 2&F? @'-A -A5 4::2?'4&2 5J:5D-'4&('&F55F(46)42&&2(@A4 :2*?5F 2 ?-' F55D51 D2&G -4 A51 E4-A510? 2665:-'4&B 2-5 A521-(+C 5JA'+'-'&G '&6'1E'-'5? @A':A ,*?-'6'5F -A5 E4?- E5 2&:A4 C D15?2G5? 641 -A5 6*-*15

21 614E 2+2&F4&'&G A51?5 6 -4 @52H 2&F *?5 5?? 15D'&'&G(A4@5$51(?2+5 2 ?4*GA- :4&?4 2-'4& @A515 '- @2? +5?- -4 +5 64*&F('& -A5 5J51:'?5? 46 D'5-C(2&F '& -A5 521&5?- F'?:A21G5 46 -A5 F*-'5? 2--2:A5F -4 A51 5J2 -5F ?-2-'4& ::41F'&G C(@5 6'&F A51 2--5&-'$5 2? 5$51 -4 -A5 E'&*-5?- '&-515?-? 46 A51 ?*+,5:-?M ?*DD41-'&G A51 G152- E'&'?-51 Z'E5&5?'& A'? ?:A5E5? 46 1564 1E(M*':H5&'&G -A5 L52 641 F'?:4$51C '& -A5 5?-(2&F 2- -A5 :4?5 46 -A5 C521 < (4& -A5 2 21E 46 -A5 15&:A '&$2?'4&(14*?'&G A51 FC'&G 5&51G'5? -4 H'&F 5 2 ?D'1'- 46 15?'?-2&:5 '& A51 D54D 5 A5?5 ?-14&G E5&-2 5J51-'4&?(A4@5$51(4& C 2::5 512-5F -A5 F5:2C 46 A51 +4F' C ?-15&G-A(@A':A @2? G12F*2 C ?'&H'&G *&F51 -A2- ?':H&5?? 46 -A5 A521- @A':A 2FE'-? 46 &4 :*15(2&F ?:21:5 C 46 4&?4 2-'4&

&' -A5 +5G'&&'&G 46 -A2- $51C RC521 ?A5 A2F F5B :'&5F ?4 $'?'+ C(-A2- -A5 :41-5? 46 2?-' 5(E*:A 2 21E5F(D5-'-'4&5F A51 -4 D14$'F5 641 -A5 G4$51&E5&-

46 -A5 H'&GF4E 26-51 A51 F5:52?5('& :2?5 46 -A5 2+B ?5&:5 41 '&:2D2:'-C 46)42&&2 9 A5 ?55E?-4 A2$5 12 '5F '& ?4E5 E52?*15 26-51 -A'?(+*-'-@2? 4& C -M 15 2D?5 '&-4 2 ?-2-5 46 G152-51 F5+' '-C(2? A51 ?D'1'-? ?*&H *&F51 -A5 :4&$':-'4&(@A':A &4@ 641:5F '-?5 6 4& A51((46 A51 F2*GA-510? ?5-- 5F '&?2&'-C "

21 C '& -A5 ?D1'&G 46 -A5 64 4@'&G C521(< =(-A2-' *&641-*&2-5 2FC 5E+21H5F 641 2&F51?(@A515((?44& 26-51 A51 211'$2 (-A5 '&:4&?-2&:C 46 A51 A*?B +2&F 2&F A51 4@& *&G4$51&2+ 5 ?5&?'+' '-'5? 4::2B ?'4&5F -A5 E4?-' ?:2&F2 4*? ?:5&5? A' 'D +5:2E5 4D5& C 5&2E4*15F 46 4&5 46 -A5 2F'5? 46 A51 ?*'-5M 2&F A'? '&,*15F @'65('& 2 D214JC?E 46,52 4*?C(D51B ?4&2 C 2??2* -5F A51 62'1 1'$2 '& -A5 D2 2:5(0 2&F :2*?5F -A5 +52*-'6* 4:H?(@A':A A2F 5J:'-5F -A5 2FE'12-'4& 46 A51 6':H 5 A*?+2&F(-4 +5 ?A41&(614E A51 A52F A'? 4*-12G5 ?4 2665:-5F A' 'D -A2-' A5 $5&-5F A'? '&F'G&2-'4& 2G2'&?-')42&&2 '& -A5 :421?5?-' 2&F E4?-' *&E2& C -51E?(2&F 6'&2 C 156*?5F -4 A2$5 2&C 6*1-A51 '&-51:4*1?5 @'-A A51 6

A5 2::4*&- 46 -A'? F'?G12:56* ?:5&5 152:A5F 2?-' 5 '& -A5 E4&-A 46)*&5 -' 4::2?'4&5F -A5 F55D5?-' :A2G1'& 2&F E41-'6':2-'4& -4 -A5 *&A2DDC D215&-? 51F'&2&F ?44& 26-51 65 ' ' 46 2 65$51(2&F -A5 M*55& @2? ?5'L5F @'-A -A5 ?2E5 F'?41F51(2::4EB D2&'5F +C E415 2 21E'&G ?CED-4E? 51 ' &5??

21'2&2(-4E ''' '+' JJ$'''(-# - '&& JJ# '&& JJ## A ' ' :2D J' > V*1'-2(-4E' $' '+' $ 8 + &# ' ' 0' 8 ' H# + = &$-' JJJ#' ' # ' * ' (B A $ 0$!$ ' $ ' 8$ #0$>' 6# ' +' ## ' #0' ' $## @E(' J#J' &' J'# A ' $ > ' -

; S ' ' 6

@2?' 5J2?D512-5F(+C' 2&J'5-C' 641' A51' A*?+2&F(' 2&F' ?A5' 156*?5F' -4' :15F'-' -A5' 62$4*12+ 5' 15D41-?' 46' A'?' DAC?':'2&?(' @A' 5' A5' @2?' F5-2'&5F' 614E' A51' D15?5&:5' '?' $'G414*?' :4&?-'-*-'4&(' A4@5$51(' -A15@' 466' -A5' E2 2FC(' @A' 5')'51?' G12F*2 C' 62' 5F' *&F51' '-' 51' -5&F51' A521-' @2?' E415' H55& C' ?5&?'+ 5' -A2&' A'?' -4' -A5' *&A2DDC' :4&F'-'4&' 46' -A5'1' :A' F(' 2&F' -4' -A5' G 44E C' D14?D5:-?' @A':A' 2@2'-5F' A51' +5 4$5F' 2?-' 5(9

' 51' 62'-A6*' 64 4@51(' 21- (' @2?' @'-A' -A5' :4*1-' 2-' -A'?' -'E5' '&' 5F'&2' F5' 2ED4' &' 2' 5--51' -4' -A5' 4*&-' F5' 5&F' 2(' F2-5F' :-4+51' -A(' A5' ?-2-5?' -A2-' -A5' E4?-' ?51'4*?' 2DD15A5&?'4&?' @515' 5&-51-2'&5F' +C' -A5' DAC?':'2&?' 641' -A5' M*55&0?' 62-5' R' 51' @A4 5' ?C?-5E(K' A5' ?2C?(' R '?' D51$2F5F' +C' 2' :4&?*E'&G' 65$51' A5' 42-A5?' 644F' 46' 5$51C' H'&F(' 2&F' '?' -41B E5&-5F' @'-A' '&:5??2&-' -A'1?-(' @A' 5' -A5' F'?41F51' A2U' 2' -A5' 2DD5212&:5?' 46' -51E'&2-'&G' '&' U' F14D?C K6

&' -A5' E52&' @A' 5(' ?2+5 2' 4?-' &4-A'&G' 46' A51' ?4':'-*F5' 641' -A5' @5 6215' 46' A51' D54D 5(' 2&F' -A5' G152-' :4&:51&?' 46' G4$51&E5&-' 6'' 5' 15: '&'&G(' 2?' ?A5' @2?' 4+ 'G5F' -4' F4' G152-' D21-' 46' -A5' F2C(' 4&' A51' :4*:A(' ?A5' '?-5&5F' -4' -A5' 15:'-2' 41' 152F'&G' 46' @A2-B 5$51' 4::*115F' 46' '&-515?-' 2-' A4E5' 41' 2+142F' A5' G2$5' 2*F'5&:5' -4' F'?-'&G*'?A5F' 6415'G&51?(' 5?D5:'2 C' ?*:A' -2 '2&?' 2?' :4* F' 2:M*2'&-' A51' @'-A' D21-':* 21?' 46' -A5' 2-5' @21(' 2&F' 2+4$5' 2' '&' 15G21F' -4' 4&?2 $4' F5' 41F4$2(' '&' @A4?5' 641-*&5?' ?A5.A2F' 2 @2C?' -2H5&

I' '$' 8 + &# '* ' (B' A' 8$# / K' /' $ 0$!$' ( ) =A ' $ > ' -' && JJ# #' $ @E(
X' - ' -# ' -' && JJ#'

-A5 '$5 '5?- :4&:51& 9 A5 15:5'$5F @'-A D 52?*15(-44(?*:A '&-5 'G5&- -12$5 517 27 A51 15&4@& A2F 2-B -12:-5F -4 -A5 2?-' '2& :4*1- A5 F15@ 641-A -A5'1 ?-4157 46 $21'4*7 '&641E2-'4&(2&F F'?E'??5F -A5E(?2C7 2 @1'-51 46 -A5 2G5(D5&5-12-5F @'-A -A5 F55D5?- 2FE'12-'4& 46 -A2- E2?:* '&5 ?-15&G-A 46 6&'&F @A':A ?*?-2'&5F A51 ?4 &4+ C *&F51 -A5 @5'GA- 46 2 E41-2 622 2FC 6

A'? E2 2FC @27 &4@ 12D'F C G2'&'&G G14*&F & -A5 < -A 46 :-4+51 @5 A2$5 2&4-A51 5D'?- 5 46 21-C1(46 -A5 64 4@'&G E5 2&:A4 C -5&41 I 4* 2?H E5 15?D5:-'&G -A5 ?-2-5 46 -A5 M*55&07 A52 -A 5 ?'- ?4114@6* '&' -A5 D2 2:5 2 F2C 4&G(-15E+B '&G C @2'-'&G -A5 A4*1 @A5& 15 'G'4& 2&F $'1-*5 ?A2 M*'- -A5 521-A @'-A A51 5- *7 D12C -A2- @5 E2C +5 D51E'--5F -4 64 4@ A51526-51 @A515 ?A5 '? ?44& -4 G4 A5 ?4 621 -12&?:5&F7 2 A*E2& 5J:5B 5&:5(-A2- -A515 '? ?:21:5 C 2&C-A'&G 46 E41-2 '-C 2+4*- A51 A5 :2& A21F C +5 ?2'F -4 F'5(+*- -4 D2?? '&-4 2 &4+ 51 5J'?-5&:5(@A':A ?A4* F 12-A51 5J.

I ? #+ 0* ? / $?' ? & #' /' $ '# #' * + ? /# # " # ? / **#& = - $? $ #$ L 0 '0 # "- /' Q# "' /# $ / /' ?#+ ?$ U ? ?$/ & + $ #' '0 ? /' ? G +$ G? '* +' ? #&D 0 / /' ? G /'< U' ' $ 6 $, / / ' $'&$+$' +$ = /$'$' $' + / V $ / '$' 6# / ' $: + '#' - X ' 8 + &# 0' 8 H#+ '* ' () + "' ? '* #" # L / & /' ' ?', '$?# '#+ G$ '$' & 0 $ /' : #$ ' $L ' $+ /':#$ #'G? '- L /'? 'G# ?'$' & ' *' - ' " /' ' G# ?' - &# ' ' $+ "' G?#&? G$ ' $' &$ 0 & ' *' # #+$0 ' '$ ' ? ' #L 0 $' $ #$ ' + ' G# ?' $? ' $ ' & > 0 D ' * +' H#= + 'G? ' /' ?#+ ' ' $'L # "' ? '- & ' ?$ ' U' ? '?$/' $? ' ?' *# >' ?# ' /#$L + / ' & ' ' - /' # ' ? ' '#& ' *' ? ' &? &?' ?$ '$ ' ? '" + ' *' ? ' /# V 0#/

F(E

:'-5 4*1 5&$ -A2& 4*1 ?4114@ A5 52$5? -A5 @41 F 6' 5F @'-A A51 15&4@&(2&F ?A5 G45? -4 5&,4C '65 5-51&2 @'-A A51 4F '& A52$5& @1'-5 -A'?(K A5 :4&: *F5?(R +5-@55& A4D5(2&F 6521(@A' 5 -A5 +152-A. '? ?-' 6 *--51'&G @'-A'& A51 K9

A5 F55D5?- G 44E &4@ 4$51?D152F -A5 &2-'4& $5& ?2+5 20? 4&G' &5?? A2F 62' 5F -4 D15D215 -A5 E'&F? 46 A51 62'-A6* D54D 5 641 -A5 ?2F :2-2?-14DA5- A5C 15:2 5F ?5$512 4E'&4*? :'1:*E?-2&:5? @A':A A2F +56415 5?:2D5F -A5'1 2--5&-'4& &-A5 D15:5F'&G ?D1'&G(2& 521-AM*2H5(2::4ED2&'5F(+C 2 -15E5&FB 4*? A*11':2&5(?*:A 2? -A5 4 F5?- E5& F'F &4- 15B E5E+51(A2F $'?'-5F &F2 *?'2(2&F 5?D5:'2 C 21. E4&2'' 2 D 2:5 +5 4&G'&G -4 -A5 M*55&(2&F 4::2?'4&.(5F 61'GA-6* F5?4 2-'4& -A515 A5 ?*D51?-'-'4*? D2B &'21F? &4@ 152F '& -A5?5 D41-5&-? -A5 D14DA5-':' ?'G&? +C @A':A 52$5& 2&&4*&:5? ?4E5 G152- :2 2B E'-C 12C51? @515 D*- *D '& 5$51C -5 E D 5D14 :5??'4&? 2&F D' G1'E2G5? E2F5 '& 5$51C D21- 46 -A5 :4*&-1C 641 -A5 15:4$51C 46 -A5'1 +5 4$5F ?4$515'G&> +*-'& $2'& 6

?2+5 2('& -A5 E52& -'E5(@2? F5 *F5F @'-A &4 62 ?5 A4D5? A5 65 - -44 ?*15 C -A5 F5:2C 46 A51 +4F' C ?-15&G-A(2&F ?A5 15?4 $5F -4 D51641E @A2- -5ED412 F*-'5? C5- 15E2'&5F 641 A51(@A' 5 A51 62B :* -'5? @515 ?-' *&: 4*F5F

? ?2F ? *' & 0 2@E(? J & /' ?$

9 D*? D'?-5D :: JJ$' 2@E(A 8$ #0$> + ## #0 [6 *12 F5 42 22:'4?(J#J :'J'#'A 9 #"$' $:2D ::'::'> 21+2,2(2&4 /' '# $'--'(F4'/ /

:5 5+12-5F -5?-2E5&-(@A':A 1566 5:-? ?4 : 521 C -A5 D5:* '21 M*2 '-'5? 46 A51 E '&F 2&F :A212:-51 ' A5 +5G'&? @'-A D15?:1'+'&G -A5 2112&G5E5&-? 641 A51 +*1'2 ' A5 41F51? A51 15E2'&? -4 +5 -12&?D41-5F -4 12&2F2(-4 -A5 12&:'?:2& E4&2?-51C 46 2&-2 ?2B +5 2 '& -A5 A2E+12(2&F -A515 F5D4?'-5F '& 2 4@ 2&F A*E+ 5 ?5D*:A15(@'-A4*-4-A51 E5E41'2 -A2& 2 D2'& '&?:1'D-'4& 4& '- R *-(K ?A5 :4&-'&*5?(?A4* F -A5 H'&G EC 41F D15651 2 ?5D*:A15 '& ?4E5 4-A51 D2:5(-A5& EC @' '? -A2-EC +4FC +5 -A515 -12&?D41-5F(2&F 2'F +C A'? ?'F5M -A2- -A5 *&'4& @5 A2$5 5&,4C5F '& -A'? @41 F(2&F(-A14*GA -A5 E51:C 46 4F(E2C A4D5 2G2'& 641 4*1 ?4* ? '& A52$5&(E2C +5 15D15?5&-5F +C 4*1 +4F'5? '& -A5 521-AK A5&(F5?'14*? 46 :4115:-'&G +C A51 5J2EB D5('& -A'? 2?- 2:- 46 A51 '65(-A5 @2?-56* D4EDI 46 6*&512 4+?5M*'5?(-4 @A':A -A5 2?-' '2&? @515 2F. F'5-5F(?A5 :4EE2&F? -A2- A51 4@& ?A4* F +5 D51B 641E5F '& -A5 D2'&5?- 2&F E4?- *&4?-5&-2-'4*? +$ L &51(2&F -A2- -A5 ?*E ?2$5F +C -A'? 5:4&4EC ?A4* F +5 F'?-1'+*-5F '& 2 E? 2E4&G -A5 D441

A5 &5J- D14$'F5? 641 ?5$512 :A21'-'5?(2??'G&'&G(2E4&G 4-A51?(E211'2G5 D41-'4&? 641 D441 E2'F5&?(2&F 2 :4&?'F512+ 5 ?*E 641 -A5 15F5ED-'4& 46 A1'?B -'2& :2D-'$5? '& 21+21C A5 5&,4'&? -A5 D*&:-*2 F'?:A21G5 46 2 A51 D51?4&2 F5+-? @'-A'& 2 C521M ?A5 15-15&:A5? ?*D516 *4*? 466':5? '& -A5 14C2 A4*?5B A4 F(2&F 15$4H5? 2 ?*:A G12&-?(@A5-A51 '& -A5 641E? 46 2&F? 41 2&&*'-'5?(2? ?A5 :4&:5'$5? -4 A2$5 +55& E2F5 @'-A4*- ?*66':'5&- @2112&- A5 '&:* .

: '

F(F ' ' 6

:2-5?' 4&' A51' ?*::5??41?' -A5' 'ED41-2&:5' 46' E2'&-2'&B '&G' -A5' '&-5G1'-C' 46' -A5' 14C2 ' F4E2'&?(' 2&F(' 2+4$5' 2 (' &5$51' -4' F'$5?-' -A5E?5 $5?' 46'-A5'1' -'- 5' -4' -A5' 'ED41-2&-' 641-15??' 46' '+12 -21

6-51' -A'?(' ?A5' :4E5?' -4' -A5' ?*::5??'4&' 46' -A5' :14@&(' @A':A' ?A5' ?5-- 5?' 4&' -A5' &62&-2')42&&2' 2?' R'M*55&' D14D1'5-41(K' 2&F'-A5' 1:AF*H5' A' 'D' 2?' A51' A*?+2&F' A5' G'$5?' -A5E' E*:A' G44F' :4*&?5' 15B ?D5:-'&G'-A5'1'6*-*15' 2FE'&'?-12-'4&M' 5&,4'&'&G'-A5E(' 2?' -A5C' @4* F' ?5:*15'-A5' 4$5' 2&F' 4+5F'5&:5' 46' -A5'1' ?*+,5:-?(' -4' :4&641E' '&' 2 ' 15?D5:-?' -4' -A5' 2@?' 2&F' *?2G5?' 46'-A5' 152 E(' -4' 2DD4'&-' &4' 6415'G&51' -4' 466':5(' > ' 2&' 51141' '&-4' @A':A' A' 'D0?' :4&&5J'4&?M (?A5' ?2@(' @4* F' +5' $51C' 'H5 C' -4' +5-12C' -A5E(' > ' 2&F' -4' E2H5' &4' 2@?' &41' 41F'&2&:5?(' R' @A':A' &5:5??21' C' 15M*'15' -A5' :4&?5&-' 46' :41-5?(K' F*1'&G' -A5'1' 2+?5&:5' 614E9' -A5' H'&GF4E 9' A5' :4EE5&F?' -4' -A5E' -A5' ?2--'5' :4&,*G2 ' A21E4&C' @A':A' A2F' 5$51' ?*+?'?-5F' +5-@55&' A51' 2&F' A51' A*?+2&FM' ?A5' +5?55:A5?' -A5E' -4' ?A4@ -A5' 2--51' 2 ' -A5' F56515&:5' 2&F' 6' '2 ' 2665:-'4&' R' F*5 -4' A'E' +5C4&F' 5$51C' 4-A51' D215&-(' 641' A'?' 5E'&5&-' $'1-*5?2&F' 6'&2 C' '&:* :2-5?' 4&' -A5E' -A5' E4?-' -5&F51' 15G21F' 641' -A5' '+51-'5?' 2&F' @5 6215' 46'-A5'1' ?*+,5:-?

A5' &5J-' :4E5?' -4' -A5' G152-' M*5?-'4&' D14D4?5F' +C

]' U' #*$"$'* $'/ '/#' & ':$# '-'4(4<.' $'?L &?' +#' > '/' ## # ' $0' #+ >' '?' "#L > ' ' +$#&$' #$' $' $'#'#"?' *' &' G?#&?'&L & $', ' ' ' '/'?$' $' " >'G#?'?'/ - #& K' " /' $' > '/' ' $ +-#' *- &/#"$/' &L $+ ' $-' + ' #= & /#"- # &

-A5 :41-5? 46 < (15?D5:-'&G -A5 G4$51&E5&- 46 -A5 152 E '& -A5 2+?5&:5 41 '&:2D2:'-C 46)42&&2 A5 F5: 215? -A2-(26-51 E2-*15 F5 '+512-'4&(2&F @'-A -A5 2F$':5 46 E2&C 46 -A5 D15 2-5? 2&F &4+ 5? 46 -A5):'&GF4E(?A5 2DD4'&-? T'&G 51F'&2&F A51 A*?+2&F -4 +5 ?4 5 15G5&- 46 2?-' 5 '& -A2- 5J'G5&:C(*&-' -A5 E2,41'-C 46 A51 G12&F?4& A21 5? +5'&G 5F -4 -A'?(?A5 2FF?(R +C -A5 :4&?'F512-'4& 46 -A5 E2GB &2&'E'-C 2&F ' *?-1'4*? M*2 '-'5? 46 -A5 H'&G EC 41F(2? @5 2? A'? 21G5 5JD51'5&:5(2&F -A5 G152- D146'- @A':A @'! 15F4*&F -4 -A5 ?-2-5 614E A'? @'?5 2&F +5&56':5&- 1* 5 K A5 5JD15??5? A51 ?'&:515 :4&$':-'4&(-A2- A'? D2?- :4&F*:- 26641F? ?*66':'5&- G*212&-55 641 A'? 62'-A6* 2FE'&'?-12-'4& +*-('& :4ED'2&:5 @'-A 5?-2+ '?A5F *?2G5(15M*'15? -A5 :*?B -4E21C 42-A 614E A'E 4& 5&-51'&G 4& -A5 F*-'5? 46 -A5 466':5

A5 &5J- E2H5? 2 ?D5:'6': D14$'?'4& 641 A51 A*?B +2&F0? D51?4&2 E2'&-5&2&:5(@A':A(I 2 -A4*GA 5?? -A2& ?A5 :4* F @'?A(2&F 621 5?? -A2& A5 F5?51$5?(:4&?'F51'&G -A5 5E'&5&- ?51$':5? A5 A2F 15&F515F -A5 ?-2-5(K ?A5 ?5-- 5? 2- 4&5 A2 6 46 2 -A5 &5- D14:55F? 2&F D146'-? 2::1*'&G 614E -A5 &5@ C.F'?:4$515F :4*&.. -1'5? '& -A5 5?-N -4G5-A51 @'-A < ((E1? 2&&*2 C(2??'G&5F 4& -A5 2:2$2 2? 46 -A5 G12&F. E2?-51?A'D? 46 -A5 E' '-21C 41F51?

6-51 ?4E5 2FF'-'4&2 15G* 2-'4&?(15?D5:-'&G -A5 F5?:5&- 46 -A5 :14@& 4& 62' *15(46)42&&20? '&52 A5'1?(?A5 15:4EE5&F? '& -A5 H'&F5?- 2&F E4?- 5E. DA2-':-51E? -4 A51 ?*::5??41? -A5 $21'4*? E5E+51?

46 A51 A4*?5A4 F(2&F A51 D51?4&2 61'5&F?(2E4&G @A4E @5 6'&F -A5 &2E5? 46 -A5 21M*'? 2&F 21B :A'4&5?? 46 4C2(/ 52-1':5 F5 4+2F' 2(-A5 :4EB D2&'4& 46 A51 C4*-A(7 2&F 21:' 2??4 F5 2 5G2(-A5 2::4ED '?A5F E'&'?-51 -4 -A5 D2D2 :4*1-

&F 2?- C(:4&: *F'&G '& -A5 ?2E5 +52*-'6* ?-12'& 46 :4&,*G2 -5&F51&5?? '& @A':A ?A5 +5G2&(?A5 ?2C?(R +5?55:A -A5 H'&G EC 41F(-A2- A5 @' 2::5D- 2 EC,5@5 ?(41 ?*:A 2? A5 ?A2 ?5 5:-(?4 -A2- ?55'&G -A5E A5 E2C +5 15E'&F5F 46 -A5 ?'&G* 21 4$5 2 @2C? +415 A'E(@A' 5 '$'&G(2&F -A2- 2E &4@ @2'-'&G 641 A'E '& 2 +5--51 @41 FM +C @A':A 15B E5E+12&:5 A5 E2C +5 5&:4*12G5F -4 '$5 -A5 E415 ,*?- C 2&F A4 ' C '& -A'? K

'J 5J5:*-41? @515 &2E5F -4 -A5 @' A5 -@4 D1'&:'D2 @515 -A5 H'&G 2&F -A5 D1'E2-5 Z'E5&5?(@A4 A2F 6* D4@51? -4 2:-'& :4&,*&:-'4& @'-A 2&C 4&5 46 -A5 4-A51? 9

A2$5 F@5 - -A5 E415 E'&*-5 C +& -A5 F5-2' ? 46 ?2+5 20? -5?-2E5&-(614E -A5 5$'F5&:5 '- 26641F? 46 A51 :4&?-2&:C '& A51 FC'&G A4*1 -4 -A5 D1'&:'D 5? @A':A A2F G4$51&5F A51 -A14*GA '65 M 46 A51 5JD2&B ?'$5 2&F ?2G2:'4*? D4 ':C M A51 D14DA5-':' '&?'GA- '&-4 -A5 5$' ? -4 15?* - 614E A51 F52-A > 5$' ?(2 2? <@A':A &4 6415:2?- :4* F 2$51-M A51 ?:1*D* 4*? 2--5&-'4& -4

I ?$' 0 * + ? &L $?# / - 0 # ? / # + (-# *$0 $($+ < # & :$ # / 6# #$ # $- $ 0$!$ $ $ --42(A 433 2 $+ G 2@E(< $ & / - # / # L ?$ # ?$ 0 - # / L * (0 $ #*## /# # *$ #L G?
$ $ + #J - / < $ /

2 ‘ A51‘ D51?4&2 ‘ 4+ 'G2-'4&?‘ ℕ‘ 2&F‘ -A2-‘ @21E‘ 2--2:AB E5&-‘ -4‘ A51‘61'5&F?(‘ @A':A‘ :4* F‘ &5$51‘ 62 -51‘ @A' 5‘ 2‘ D* ?5‘ +52-‘ '&‘ A51‘ +4?4E

6-51‘D51641E'&G‘ -A'?‘F*-C(‘?A5‘F2' C‘G15@‘ @52H51(‘ -A5‘ D4@51?‘ 46‘A51‘ E'&F‘ ?55E'&G‘ -4‘ +1'GA-5&‘ 2?‘ -A4?5‘ 46‘A51‘ +4FC‘F5: '&5F‘ A5‘ :4&:51&?‘ 46‘A51‘G4$51&B E5&-‘?-' ‘4::*D'5F‘A51‘-A4*GA-?(‘ 2&F‘ ?5$512‘ D*+ ':‘ E52?*15?(‘ @A':A‘?A5‘A2F‘D4?-D4&5F‘-A14*GA‘*1G5&:C‘ 46‘4-A51‘+*?'&5??(‘ 41‘G14@'&G‘ '&6'1E'-'5?(‘ D15??5F‘?4‘ A52$' C‘4&‘A51‘A521-(‘-A2-‘?A5‘E2F5‘-A5E‘-A5‘?*+,5:-‘ 46‘2‘:4F':'‘-4‘A51‘641E51‘@' ‘ -‘@2?‘5J5:*-5F‘ 4$5EB +51‘ ; 1F(‘ < =(‘ 4& C‘-A155‘F2C?‘+56415‘A51‘F52-A

A155‘ 46‘-A5‘D14$'?'4&?‘:4&-2'&5F‘'&‘ '-‘215‘-44‘15B E21H2+ 5‘-4‘D2??‘*&&4-':5F‘ A5‘6'1?-‘ :4&:51&?‘ -A5‘ :4F'6':2-'4&‘46‘-A5‘ 2@?‘ 41‘-A'?‘D*1D4?5(‘-A5‘M*55&‘ 2DD4'&-?‘2‘:4EE'??'4&‘-4‘E2H5‘2‘&5@‘F'G5?-‘46‘-A5‘ ?-2-*-5?‘2&F‘D12GE2-':2?(‘-A5‘:4&-12F':-41C‘-5&41‘46‘ @A':A‘?-' ‘4::2?'4&5F‘E*:A‘5E+2112??E5&-‘'&‘ 2?-'B '2&‘,*1'?D1*F5&:5‘ A'?‘@2?‘2‘?*+,5:-‘?A5‘2@2C?‘ A2F‘E*:A‘2-‘A521-ℕ‘+*-‘&4‘&52151‘2DD142:A‘A2F‘ +55&‘E2F5‘-4‘'-‘-A2&‘-A5‘$2*2+5‘-A4*GA‘'&?*66'B :'5&-‘@41H‘46‘ 4&-2$4‘'&‘-A5‘521C‘D21-‘46‘A51‘ 15'G&ℕ‘2&F(‘&4-@'-A?-2&F'&G‘A51‘D15:2*-'4&?(‘&4&5‘ E415‘5665:--*2‘@2?‘F5?-'&5F‘-4‘-2H5‘D2:5‘-' ‘-A5‘ 15'G&‘46‘A'‘D‘ 9

A5‘?5:4&F‘'-5E‘A2F‘1566515&:5‘-4‘-A5‘&2-'$5?.46

1‘ ? ℕ / $ M$‘ $ ‘/‘ $‘ "# $# ‘ *‘ ?#‘ #" ‘< $ $'‘- 0#?/‘2(3(‘$/‘ -$ #& $‘$&& ‘ *‘ G?#&?‘ ?‘ ?‘ $"+$#&$‘/‘ $+# K'*# ‘ $/‘ +$>‘*# /‘#‘ ‘#‘&?$-‘'#‘ -# /‘2@E4& +- ? ?/ ?‘" L $ /‘ ‘##‘&? JJ'#‘ * ?#‘6# >

-A5 5@ 41 F 14?? 2+*?5? A2F 21'?5&-A515 ?'&:5 -A5 D21-'2 15$'$2 46 -A5 ' (& 2 -A4*GA 2? 2??? ?2C?('&-5 'G5&:5 46 -A'?@2? :2156* C H5D- 614E -A5 521? 46 -A5 M*55&K9 4E5 $2G*5 2DD15B A5&?'4& 46 -A5 -1*-A(A4@5$51(2DD521? -4 A2$5 641:5F '-?5 6 4& A51 2&F ?A5 5&,4'&? A51 ?*::5??41?('&-A5 E4?- 521&5?- E2&&51(-4 M*':H5&-A5 G44F @41H 46 :4&$51-'&G 2&F :'$' 'L'&G -A5 D441 &F'2&?(-4 -152- -A5E @'-A -A5 G152-5?- G5&- 5&5??(2&F 15F15?? 2&C @14&G? -A5C E2C A2$5 ?*66515F '& -A5'1 D51?4&? 41 D14D51-C

2?- C(?A5 5JD15??5? A51 F4*+-? 2? -4 -A5 5G2 '-C 46 -A5 15$5&*5 F12@& 614E -A5 2 :2$2 2?(:4&?-'-*-'&G -A5 D1'&:'D2 '&:4E5 46 -A5 :14@& A5 F'15:-? 2 :4E E'??'4& -4 2?:51-2'& @A5-A51 '- @515 41'G'&2 C '&-5&F5F -4 +5 D51D5-*2 (2&F '6 -A'? @515 F4&5 @'-A -A5 6155 :4&?5&- 46 -A5 D54D 5M 5&,4'&'&G A51 A5'1?('& -A2- 5$5&-(-4 :4 5:- -A5 -2J ?4 -A2- '- ?A4* F D15?? 52?- A52$' C 4& A51 ?*+,5:-? A4* F '- +5 64*&F 4-A51@'?5(A4@5$51(?A5 F'15:-? -A2- -A5 5B G'? 2-*15 +5 ?* E E4&5F -4 F5$'?5 D14D51 E52?*15? 641

I $ $ $ G? G# ? - & /* >& -?$ &> L +$ D # ?# $ $ #' *' ? / /# & # *' ? /# U - " $ / ? / & " / '& '0 &? # '& +- + & '$ # / , C + #, , $' # $0 ' $# / + # ' &$ ' ! , C $ # ' $# '-$ & + +# ' $ $ / '& #+ '/$ C# =- $" '$'$# + + / &$&? $ & -# = & -$ & , C & '$ / / $# / # '$' &/ & /# M" #" - / ? J (I))) D (? ' ; (& ((I)D + (4 & ((I)C J ? + * . I)) + I)) C ((+ ') (< ' $/ / + #' -

?*DD C'&G -A5 @2&-? 46 -A5 :14@&(> E52?*15? F5B D5&F'&G 641 -A5'1 $2 'F'-C 4& -A5 G44F D 52?*15 46 -A5 ?*+,5:-? 46 -A5 152 E K9

*:A @515 -A5 FC'&G @41F? 46 -A'? 2FE'12+ 5 @4E2&(F'?D 2C'&G -A5 ?2E5 15?D5:- 641 -A5 1'GA-? 2&F '+51-'5? 46 -A5 &2-'4& @A':A ?A5 A2F ?A4@& -A14*GA '65(2&F ?-1'$'&G -4 ?5:*15 -A5 + 5??'&G? 46 A51 +5&'G& 2FE'&'?-12-'4& -4 -A5 E4?- F'?-2&- 2&F +21+214*? 15G'4&? *&F51 A51 ?@2C A5?5 -@4 F4:*B E5&-? @515 2 D15:'4*? 5G2:C +5M*52-A5F -4 A51 D54B D 5(-4 G*'F5 -A5E @A5& -A5 'GA- 46 A51 D51?4&2 5JB 2ED 5 ?A4* F +5 @'-AF12@& 641 5$51

A5 M*55&0? ?'G&2-*15 -4 -A5 :4F':'(@A':A ?-' 5J'?-? 2E4&G -A5 E2&*?:1'D-? 46 -A5 14C2 '+121C 2- 2F1'F(?A4@?(+C '-? ''15G* 21 2&F ?:21:5 C 5G'+ 5 :A212:-51?(-A5 655+ 5 ?-2-5 -4 @A':A ?A5 @2? -A5& 15. F*:5F 6 A5 A2F &4@ 2F,*?-5F 2 A51 @41 F C :4&B :51&?(2&F ?A5 D15D215F -4 F5$4-5 A51?5 6(F*1'&G -A5 +1'56 ?D2:5 @A':A 15E2'&5F(-4 -A4?5 46 2 A'GA51 &2B -*15 - @2? +*- -A5 2?- 2:- 46 2 '65 46 D15D212-'4& A5 A2F -A5 E'?641-*&5(:4EE4& -4 D51?4&? 46 A51 12&H(-4 +5 ?5D212-5F '& A51 2?- E4E5&-? 614E -A4?5 @A4?5 6' '2 -5&F51&5?? E'GA- A2$5 F4&5 ?4 E*:A -4 ?46-5& -A5 +'--51&5?? 46 F52-A *- ?A5 A2F -A5 G44F 641-*&5(E4?- 1215(-4 A2$5 ?5:*15F 641 -A'? -1C'&G A4*1 -A5 ?4 2:5 46 F'?'&-515?-5F 61'5&F?A'D 641 ?A5

1 ? #"# $ & /#&# # = + &# ?$ "#' $*$&L - ' /$+ " ? * ? #+# * ?# $ #" $ * >$ #0 $ > $ $/ #/ # ? , # ? + / &$/ $-- / / ? , $L / 6# + '# 22 JJ# + # ? 'G D'0 * #& /

; = S ‘ ‘ 6

+5A5 F‘ 214 * &F‘ A51‘ -A5‘ 61'5&F?‘ 46‘ A51‘ : A' FA44F(‘ 641 E B
5F‘ 2&F‘ D14$5F‘ '&‘ -A5‘ F21H‘ ?52?4&‘ 46‘ 2F$51?'-C

?‘ ?A5‘ ?2@‘ -A5 E‘ +2-A5F‘ '&‘ -521?‘ 214 * &F‘ A51‘ +5F(‘
?A5‘ : 2 E C‘ ?2'F(‘ ! ‘ 4‘ &4-‘ @55D‘ 641‘ E 5(‘ &41‘ @2?-5‘
C4 * 1‘ -' E 5‘ '&‘ 61 * '- 5??‘ D12C51?‘ 641‘ E C‘ 15 : 4$51C(‘ + * -‘
D12C‘ 12-A51‘ 641‘ -A5‘ ?2 $2-'4&‘ 46‘ E C‘ ?4 * K9‘ &‘ 15B
: 5'$'&G‘ -A5‘ 5J-15 E 5‘ * & : -'4&(‘ ?A5‘ 156 * ?5F‘ -4‘ A2$5‘ A51‘
655-‘ 5JD4?5F(‘ 2?‘ @2?‘ * ?* 2 ‘ 4&‘ -A2-‘ 4 : : 2?'4&N‘ 2‘ : '1B
: * E ?-2& : 5‘ @A' : A(‘ 4 : : * 11'&G‘ 2-‘ 2‘ -' E 5‘ @A5&‘ -A515‘
: 2&‘ <9 ‘ 8U‘ ?* ?D' : '4&‘ 46‘ 2665 : -2-'4&(‘ '?‘ 46-5&‘ &4-' : 5F‘ +C‘
D2&'?A‘ @1'-51?‘ 2?‘ 2‘ D1446‘ 46‘ -A2-‘ ?5&?'-'$5‘ F5 ' : 2 : C‘
2&F‘ F5 : 41 * E‘ @A' : A‘ F'?-'&G * '?A5F‘ A51‘ -A14 * GA‘ '65 "f"
-‘ 5&G-A(‘ A2$'&G‘ 15 : 5'$5F‘ -A5‘ ?2 : 12 E 5&-?(‘ 2&F‘ D51B
641 E 5F‘ 2 ‘ -A5‘ 46 :5?‘ 46‘ 2‘ ?'&: 515‘ 2&F‘ F5$4 * -‘ A1'?B
-'2&(‘ ?A5‘ G5&- C‘ 5JD'15F‘ 2‘ '-- 5‘ +5 6415‘ &44&(‘ 4&‘ 5F B
&5?F2C(‘ 4$5 E +51‘ ; -A(‘ < =(‘ '&‘ -A5‘ 6'6-C.64 * 1-A‘
C521‘ 46‘ A51‘ 2G5(‘ 2&F‘ -A'1-'5-A‘ 46‘ A51‘ 15'G&

R‘ C‘ A2&F(K‘ ?2C?‘ 5-51‘ 21-C1(‘ '&‘ 2‘ 5--51‘ @1'-B
-5&‘ 4&‘ -A5‘ ?2 E 5‘ F2C‘ -4‘ -A5‘ 1 : A+'?A4D‘ 46‘ 12&2F2(‘
QQ‘ 62 ?‘ D4@51 5??‘ +C‘ 12C‘ ?'F5(‘ 641‘ $51C‘ ?4114@‘ A5‘
@41 F‘ A2?‘ 4?-‘ '-?‘ &4+ 5?-‘ 41&2 E 5&-N‘ 2‘ 4??‘ -4‘ +5‘ F5B
D 415F‘ &4-‘ 4& C‘ +C‘ D2'&(‘ @A' : A‘ ?A5‘ A2?‘ ?4‘ 4&G‘
: 211'5F‘ 641@21F‘ '&‘ -A5‘ : 21551‘ 46‘ G 41C(‘ + * -‘ +C‘ 5$51C‘
&2-'4&‘ '&‘ A1'?-5&F4 E‘ N‘ 641‘ ?A5‘ @2?‘ -A5‘ E '1141‘ 46‘
5$51C‘ $'1-* 5(‘ -A5‘ ?A'5 F‘ 46‘ -A5‘ '&&4 : 5&-(‘ 2&F‘ 2&‘
2$5&G'&G‘ ?@41F‘ -4‘ -A5‘ @' : H5F‘ ‘ H&4@‘ &4&5‘ 46‘ A51

I‘ ‘ ‘ #& ‘ $ ‘ = + ‘ '# ‘ - ‘ &A ‘ ‘ #& ‘
+ ‘ * ‘ 23) ‘ A ‘ 8$ #0$> ‘ + ‘ * ‘ 2@) A 8$ #0$> ‘ 0# -
‘ #0 ‘ J#J ‘ &$- ‘ J '# ‘ $0 $‘ G$ ‘ 0 + ‘ D1' ‘
c‘ 15$2 4(‘ $ # $‘ / ‘ 2(@2 ‘ $ /‘ $ & / /‘ ? ‘
‘ $- ‘ + ‘ / ‘ & ‘ / ‘ 6# ? ‘ &‘ 2F ? ‘ 2( ) (

?5J(' '&' 2&:'5&-' 41' E4F51&' -'E5?(' @A4' '&' EC',*FGE5&-' '?' 2-' 2 ' @41-AC' -4' +5' &2E5F' @'-A' -A'?' '&:4ED212+ 5' 2FC K9

4' -'E5' @2?' 4?-' '&' E2H'&G' D15D212-'4&?' 641' -12&?D41-'&G' -A5' M*55&0?' +4FC' *&5&+2 E5F' -4' 12B &2F2(' '&'?-1':-' :4&641E'-C' -4'A51' 41F51?' -' @2?' 5?B :41-5F' +C' 2' &*E514*?' -12'&' 46' :2$2 '51?' 2&F' 5:: 5B ?'2?-':?(' 2E4&G' @A4E' @2?' -A5'62'-A6*' 21-C1(' A5' D14:5??'4&' +5G2&' '-?' E4*1&6*' E21:A' -A5' F2C'64 4@B '&G' A51' F52-A(' -2H'&G' -A5' 14*-5' -A14*GA' 1MC2 4(' 4 5F4(' 2&F')25&' :21:5 C' A2F' '-' 56-' 5F'&2'F5' 2ED4(' (@A5&' 2' -15E5&F4*?' -5ED5?-' ?5-' '&(' @A':A' :4&-'&*5F' @'-A' '-- 5' '&-511*D-'4&' F*1'&G' -A5' @A4 5' ,4*1&5C' A5' 142F?' @515' 15&F515F' &521 C' 'ED2??B 2+ 5N' -A5' +1'FG5?' ?@5D-' 2@2C(' -A5' ?E2 ' ?-152E?' ?@4 5&' -4' -A5' ?'L5' 46'-A5' 2G*?(' 2&F' -A5' 5$5' :4*&B -1C' +*1'5F' *&F51' 2' F5 *G5' 46' @2-51' 5'-A51' ?*&' &41' ?-21?' @515' ?55&' F*1'&G' -A5'1' @A4 5'' D14G15??' A5' A41?5?' 2&F' E* 5?' @515' +41&5' F4@&' +C' -A5' -41B 15&-?(' 2&F' -A5' 1'F51?' '&' ?5$512' '&?-2&:5?' D51'?A5F' @'-A' -A5E' R' 5$51(K' 5J: 2'E?' 21-C1(' !'F'F' '5&B :4*&-51' ?*:A' D51'?' '&' -A5' @A4 5' 46' EC' A2L21F4*?' D'G1'E2G5' -4' GCD-K6

-' 5&G-A(' 4&' -A5' <S-A' 46' 5:5E+51(' -A5' E5B 2&:A4 C' 2&F' @2C@41&' :2$2 :2F5' 152:A5F' -A5' D2:5' 46' '-?' F5?-'&2-'4&N' 2&F' 2E'F?-' -A5' @' F' ?-1'65' 46' -A5' 5 5E5&-?' -A5' D52:56*' 15E2'&?' 46' ?2+5 2' @515' 2'F(' @'-A' ?'ED 5' ?4 5E&'-'5?(' '&' -A5' 12&:'?:2&' E4&B 2?-51C' 46' -A5' A2E+12' 515(' *&F51' -A5' ?A2F4@

1' - ' -# ' -'&& JJ#J' / ' ' J$"" $ ' ?' $ " $" ' 0#/' -'&& JJJ A ?' J' *' ?' -#

46-A4?5 $5&512+ 5 4? 5E -4@51?(2&F '& -A5A521-
46 -A5 :2D'-2 (@A':A A51 &4+ 5 :4&?-2&:C A2F 15B
:4$515F 641 A51 :4*&-1C(-A5C :4&-'&*5F -4 15D4?5 -'
26-51 -A5 F52-A 46 51F'&2&F(@A5& -A5C @515 15B
E4$5F -4 +5 2'F +C A'? ?'F5 '& -A5 ?-2-5 C E2*?4B
5*E 46-A5 :2-A5F12 :A*1:A 46 12&2F2 9

?A2 F5651 -A5 15$'5@ 46 b*55& ?2+5 20? 2FB
E'&'?-12-'4&(*&-' '- :2& +5 F4&5 '& :4&,*&:-'4&
@'-A -A2- 46 51F'&2&F',2&F?A2 :4&6'&5 EC?5 62-
D15?5&- -4 -A5 :4&?'F512-'4& 46?*:A D14E'&5&- -12'-?
46 A51 :A212:-51 2? A2$5 +55& ?*GG5?-5F +C -A5 D15B
:5F'&G A'?-41C 46 A51 '65

51 D51?4&(2? E5&-'4&5F '& -A5 521 C D21- 46 -A5
&2112-'$5(@2? 46-A5 E'FF 5 A5'GA-(2&F @5 D14D41B
-'4&5F A5 A2F 2 :521(615?A :4ED 5J'4&(@'-A
'GA- + *5 5C5? 2&F 2*+*1& A2'1(> 2 ?-C 5 46 +52*-C
5J:55F'&G C 1215 '& D2'& 51 652-*15? @515 15B
G* 21(2&F *&'$51?2 C 2 4@5F -4 +5 *&:4EE4& C
A2&F?4E5 6 A5 ' *?'4& @A':A 2--2:A5? -4 12&H

]' +$ / K' ' &$-' &&#'
A $ 0$!$ ' ' $ ' 2@E(A'
8$ #0$>' + ' ## #0 J#J' &$-'
J'# A 9 # $' + ' ' #0' ' &$-'
JJJ#' A $'$"# ' :#$""# ' # '
-$" $'* 'F4

X ?' $ '/' ' $ $&# '
+$ D' *' ? ' U' ' + " '
? + $' / ' + >' " #'& - '
' " ' ' & + - #&# V' $-'
&&#.' "$ ' $? ' & +L
- $ >' "#K 'U' ' +# $ ' + #
" $ # $' >' ? ' $ '*$&&# '
/ ' '0# ' - $ ' $ &$ $
/$ + >' ? + $ 0 #&$
/ ' ' > ' $ ' ' ' &$-'#' .

' ' #& ' $> 'R' / ' ', '
$'#$ ' ' >' / ' /#" #/$/' '
?$ $'$ ' $ > $ / ' " $ # $
? + $' >' ' $+0 ' '
+ $'$ #+$ +$! $/' ' L
$0 '$, $'! >K# / '+ &? '
$ > $ $' / ' +$> ' ? + =
$ V' $ ' + $0 '* '23F .'
/' '# / ' G? '?$/' #D G# '
* , ' -- #+# # ' *- L
$' 0 '$ # ' / ' ' ? #L
$ ' '/ & $ 'U' '? + $
- $ I'/ $ ' / ' ' ' /$'
$ ' + " ' , ' > ' ? ' '# '
" $ '# $ '" $ # $' # $ '
/ ' ' '& + ' ' - $V' ; # =
& $" $ '

E 415 5?D5:'2 C @A5& *&'-5F @'-A 5&G2G'&G E 2&&51?(E 'GA- 52F *?' -4 ?*?D5:- ?4 E5 5J2GG512-'4&' '& -A5 5&:4 E'*E?' ?4 '+512 C 2$'?A5F 4&' A51 *- -A5C @4* F ?55E -4 +5 '& 2 G152- E52?*15',*?-'6'5F +C -A5 D41-12'-?' -A2- 15E2'&' 46 A51(@A':A :4E+'&5 2 62* -B 5?? ?C E E5-1C 46 652-*15?' @'-A ?'&G* 21 ?@55-&5?? 2&F '&-5 'G5&:5 46 5JD15??'4&

51. E2&&51?' @515 E4?- G12:'4*?' 2&F D 52?'&G A5C @515 E21H5F +C 2 &2-*12 F'GD&'-C 2&F 2 E 4B F5?- 15?51$5(-5ED515F +C 2& 26'2+' '-C @A':A'6 4@5F 614E -A5 H'&F '&5??' 46 A51 F'?D4?'-'4& A5 @2?' -A5 2?- D51?4& -4 +5 2DD142:A5F @'-A *&F*5 62E ' '21'-C C5- -A5 15?D5:- @A':A ?A5 'ED4?5F @2?' E'&G 5F @'-A -A5 ?-14&G5?- 655 '&G?' 46 F5$4-'4& 2&F 4$5 A5 ?A4@5F G152- -2:- '& 2::4EE4F2-'&G A51?5 6 -4 -A5 D5:* '21 ?'-*2-'4& 2&F :A212:-51 46 -A4?5 214*&F A51 A5 2DD5215F '& 21E?' 2- -A5 A52F 46 A51 -144D?(2&F ?A1*&H 614E &4&5 46 -A5 A21F?A'D?' 46 @21 *1'&G -A5 15641E?' '&-14F*:5F '&-4 -A5 15 'G'4*?' A4*?5?(?A5 $'?'-5F -A5 &*&&51'5?' '& D51?4&(-2H'&G A51 &55F 5B @41H @'-A A51(2&F D2??'&G -A5 F2C '& -A5 ?4:'5-C 46 -A5 '&E2-5? A5&' -12$5 '&G'& 2 ':'2(?A5 2--'15F A51?5 6 '& -A5 :4?-*E5 46 -A5 :4*&-1C(+4114@'&G641 -A2- D*1D4?5 -A5 ,5@5 ?' 2&F 4-A51 41&2E5&-?' 46 -A5 2F'5?' -A515(2&F 15-*1&'&G -A5E @'-A '+512 2FF'B -'4&? 9 C -A'?' :4&F5?:5&F'&G 2&F :2D-'$2-'&G F5B D41-E5&-(2?' @5 2?' +C A51 A'GA51 M*2 '-'5?(?A5 G2'&5F 2& 2?:5&F2&:C 4$51 ()A51 -*1+* 5&- ?*+,5:-?' @A':A &4 T'&G 46 D2'& :4* F 5$51 +42?-

I + / $ &$/ / 6# + '# '##

A5 ?D4H5 -A5 2?-' '2&' @'-A E*:A 5 5G2&:5 2&F :4115:-&5??' A5 A2F 2& 52?C 6*5&:C 46 F'?:4*1?5(@A':A(-A4*GA G5&512 C 46 2 ?51'4*?:4ED 5J'4&(@2? 4::2?'4&2 C ?52?4&5F @'-A 2G1552+ 5 ?2 '5?(?4E5 46 @A':A A2$5 D2??5F '&-4 D14$51+?9 A5 @2? -5ED5B 12-5 5$5& -4 2+?-5E'4*?&5?? '& A51 F'5-(?5 F4E 41 &5$51 -2?-'&G @'&5 6 2&F ?4 61*G2 '& A51 -2+ 5(-A2- -A5 F2' C 5JD5&?5? 641 A51?5 6 2&F 62E' C F'F &4- 5JB :55F -A5 E4F512-5 ?*E 46 641-C F*:2-? A5 @2? 5M*2 C ?'ED 5 2&F 5:4&4E':2 '& A51 2DD215 & 2 D*+ ':4::2?'4&?('&F55F(?A5 F'?D 2C5F 2 14C2 E2G&'6':5&:5 N +*- ?A5 A2F &4 15 '?A 641 '- '& D1'B $2-5(2&F ?A5 6155 C G2$5 2@2C A51 :4-A5? X 2&F ,5@5 ?(P 2? D15?5&-? -4 A51 61'5&F? 2-*12 C 46 2? ?5F2-5(-A4*GA :A5516* -5ED51(99 ?A5 A2F '-- 5-2?-5

1 +/ &$/ 0# -$ $ # #& *+ 23F >U*G21(148&':2F5 4? 5C5?(#&$-# P +/ &$/ / 6# + '#-4F4 g *:A 4::2?'4&? A2$5 1215 :A21E?(46 :4*1?5(641 -A5 G4?B ?'D'&G :A14&':51? 46 -A5 D51'4F $+ " ? ? ? " " & + #$ *? 0$-# +$ /- $# *# &P ?$ '# 2()3$ $ /0> ?" / & $ / $$&# &$-JJJ##JJJ### .U $L 0 $'M$ / /$ / ' /V $> " $ U 0>" $ / $ /? / *? ?"? $ D ?$ #/ ? +$# $# / " $' 'O% ' (H > 148&':2F5 4? 5C5?(''2D '$

K , $ -$ $" * +$ $ #"# $ *? , G # $* ? - " # 8$ #&#$? G# "? ?$0# $ #0 $#> # ?# G$> U &#/ $ $ #$, - , ' "/ 8$L #&#$ / &?$ / ' #/ '# -$ $? +$ $. , " $" $ & $ 0 $ +$ > " $ $ '#$ - 0 V > $ $ + ##-345

? +$" #*#& # ' L > *! G - / ? /$ "? =# =$G $ "$ *# #$ $ / ? /$ "? $ #$; *# "$ $-+ / &$/ + '# J## RI

11U " R $> ? $? *? $ / $ ## $ U /

641 -A5 61'$4 4*? 2E*?5E5&-? @A':A E2H5 *D ?4 E*:A 46 2 :4*1- '65 2&F('6?A5 5&:4*12G5F -A5 D15B ?5&:5 46 E'&?-15 ? 2&F E*?':'2&? '& A51 D2 2:5('- @2? -4 @52& A51 C4*&G &4+' '-C 614E -A5 :421?51 2&F 5?? '&-5 5:-*2 D 52?*15? -4 @A':A -A5C @515 2FF':-5F 9

E 4&G A51 E412 M*2 '-'5?(-A5 E4?- :4&?D':*4*?(D51A2D?(@2? A51 E2G&2&'E'-C A5 +5-12C5F &4B -A'&G '-- 5 41 ?5 6'?A '& -A4*GA- 41 2:-'4& 51 ?:A5E5? @515 $2?-(2&F 5J5:*-5F '& -A5 ?2E5 &4+ 5 ?D'1'- '& @A':A -A5C @515 :4&:5'$5F A5 &5$51 5ED 4C5F F4*+-6* 2G5&-? 41 ?'&'?-51 E52?*15?(+*- -A5 E4?- F'15:- 2&F 4D5& D4 ':C 6 A5 ?:41&5F -4 2$2' A51?5 6 46 2F$2&-2G5? 466515F +C -A5 D516'FC 46 4-A51? %\ A515 ?A5 A2F 4&:5 G'$5& A51 :4&6'F5&:5(?A5 G2$5 A51 A521-C 2&F ?-52FC ?*DD41- 2&F ?A5 @2? ?:1*D* 4*? -4 15F55E 2&C D 5FG5 ?A5 A2F E2F5 -4 -A4?5 @A4 $5&-*15F '& A51 :2*?5(A4@5$51 *&D4B D* 21 A5 ?*?-2'&5F Z'E5&5? '& 2 A'? 4+&4J'4*? +*- ?2 *-21C 15641E? A5 ?5:4&F5F 4 *E+*? '& -A5 D14?5:*-'4& 46 A'? 21F*4*? 5&-51D1'?5(2&F ?A'5 F5F A'E 614E -A5 :2 *E&C 46 A'? 5&5E'5? A5 F'F -A5 ?2E5 G44F ?51$':5 -4 A51 62$4*1'-5 4&?2 $4 F5 41B F4$2 2&F -A5 F2C 46 A51 F52-A @2? 65 -(2&F(2? '-

$ $ " #$? $ > + # + = +$ /$+# * & +-#/ $/$V 0#/ - @@3 & /#" &#$V A "$ = I + "' ? $# * ? #&$ '#' &$-'#' & +$ / K #& U $ + # /' / - $ / 0$= / '+ #& / /$ -$ V *' ?#' # ' ? $ + *' ? $-' &&#' *$# ? P $ / $ #& /' ! ; #$, & $ - # $ '# &?$-' J *' ?# 6# >

D14$5F -1* C 65 - +C +4-A 2? -A5 2?- 46 -A5'1 G44F 641-*&5 9 1-'6':5 2&F F*D ':'-C @515 ?4 2+A4115&- -4 A51 :A212:-51 2&F ?4 2$51?5 6'04E A51 F4E5?-':D4 ':C -A2- @A5&-A5C 2DD521 '& -A5 6415'G& 15 2-'4&? 46 D2'& '- '? :51-2'& C &4- 'ED*-2+ 5 -4 A51 A5 @2? '&:2682+ 5 46 A21+4*1'&G 2 D5--C F'?-1*?- 41 2B -5&- E2 ':5M 2&F 2 -A4*GA ?-5E '& -A5 5J5:*-'4& 2&F 5J2:-'4&? 46 D*+ ':,*?-':5 E2F5 -A5 E4?- G5&514*? 2 4@2&:5 2&F 5$5& ?4E5-'E5? 2F$2&:5? -4 -A4?5 @A4 A2F D51?4&2 C '&,*15F A51 6

- -A5 D1'&:'D 5 @A':A G2$5 2 D5: '21 :4 4*1'&G -4 5$51C 652-*15 46 ?2+5 20? E'&F @2? D'5-C - ?A4&5 641-A 614E -A5 $51C F5D-A? 46 A51 ?4'' @'-A 2 A52$5& C 12F'2&:5 @A':A ' *E'&2-5F A51 @A4 5 :A2B 12:-51 41-*&2-5 C A51 521 '5?- C521? A2F +55& D2??B 5F '& -A5 1*GG5F ?:A44 46 2F$51?'-C *&F51 -A5 5C5 46 2 E4-A51 @A4 'ED 2&-5F '& A51 ?51'4*? E'&F ?*:A ?-14&G D1'&:'D 5? 46 15 'G'4& 2? &4-A'&G '& 26-51 '65 A2F D4@51 -4 ?A2H5 - 2& 521 C 2G5 '& -A5 6 4@51

I ? + $ &? > * +0 & - / & $* ? , / $? ? G G ? & * ?# * $ / * # " $'$ + #- 4(2 , . ? #+ * ? 8 $ $- $# 'G # + , #' &$ > J- / $&& /L # " 8# '# ! & + # # / /# 0 "# $ *$ & & L # # & /#0# & +/ $, !$& $ 8 $ '#! $+ $0 $ $, $+$ + $&# ! L "#$ / &$ & & $, $ J -= $ # - '# # / /#" # $L # # & + $ $/ + - +* #

*$ 0$ " #- , $, $+ +# 0 #" -$ + , #0 $# , $+ "# ' $ # = & $ # $ / ' - $ & $ $, $+ ' # #+ + $- -$ # $ # "# $V :# $:# = + - F)@

C A5 152F51 E2C 15:2 2 ?-1'H'&G 5J2ED5 46-A'?('& -A5 521 C D21- 46 A51 15'G&('& A51 G152- -5&F51&5??2&F 641+5212&:5 -4@21F?I A5 A*E4*1? 46 21' 4(1:A+'?A4D 46 45F4(A51 M*4&B F2E 61'5&F(+*- -A5& A51 E4?- 'ED2:2+5 645

46' C4*-A' 2&F' +52*-C(' ?A5' @2?' '&-14F*:5F' (-4' A51' +14-A510?' :4*1-M' +*-' '-?' + 2&F'?AE5&-?(' ?4' F2LL '&G' -4' 2' C4*&G' 'E2G'&2-'4&(' A2F' &4' D4@51' 4$51' A51?M' 641' ?A5' @2?' ?*114*&F5F' +C' 2' E412 ' 2-E4?DA515' 46' D*1'-C(

R' #'# "'*$ ' *' $&?' ?# "' *' # '$ /'" # II%

*:A' @2?' -A5' F5:41*E' 46' A51' E2&&51?(' -A2-(' -A4*GA' 5&:4ED2??5F' +C' 62 ?5' 61'5&F?' 2&F' 4D5&' 5&5E'5?(' &4-' -A5' ? 'GA-5?-' 15D142:A' @2?' +152-A5F' 4&' A51' 62'1' &2E5' '&' -A'?' :411*D-' 2&F' :2 *E&'4*?' :4*1-

A5' G2$5' 2' '+512 ' D41-'4&' 46' A51' -'E5' -4' D1'$2-5' F5$4-'4&?(' 2?' @5 ' 2?' -4' -A5' D*+ ':' 5J51:'?5?' 46'15 '.' G'4& 6' A5' 5JD5&F5F' 21G5' ?*E?' '&' *?56* ' :A21'-'5?

I' $0 $' $' ? ' 0 ? C' & '+#"?'G '?$' $'* ' ?' G? ' *' # C'0 $ #* '- L $# !' '/ $' '6 $' '#' $# L >'&?$ #> ?$'G? '$ '#'* /' # & >' ' ? $ /' #' # /'$ " ' $&D >'? '1 #'# "'*$' *' $&?' ?# "' *' #'$ /'" # /'#'&$'/ $+'$ /' L + ''## '?' *' ?# "' ?$' ' " ' $'&$'? $ #' *'& ' 'G# ?'? $=' 'C >'?$0# $ "# ' '&$ '$'0 $+' '?C' G$ /' ?$- ?' - /' +- ' *' ?'+# / /' '#'0>'/ " ' ' ?' C' & #'$'0'+$/'#++ $ R

'!' $' $ C' $>' ' ' #& ' U' '$ / '>' /##" &#$' , ' #$ & &$' '& '/#'# ' , ' $, '/ '/#$'>'/ ' &? ' $'$' + >' & -$/$' '" $ / ' >'$ / ' " &# '/ ' $" ' +$=' &# '/ ' + &? ' > '>' ## =' # ' -$ &#$' , ' ()' + ' ' (' ' + ' I) ' + ' , ' # +- ' '?$ $'$ - L '$' '/#'# ' *#&# '>'$' $' -$ $0 $' / ' # ' $' $ $' ' $ &# ', '#$ " '/ ' ', ' & 0 $'$ ' &$ $'$ ' ' - $ =' + ' ' $'& $ '/ ' $' >" #$' $'$$ "#+$'/#&# ' ' > 0' ' # #$' >' ' $'$' >' / - ' & + ' +$ ' $' /# &#- 0 ' ' + /$'$'>'& "#$' & +=' 0 $'$' &$/$' /#$' / K#' /$' $' ? $' &$ #&$' / +$' / ' $' + &?$' ' #'$' >' J $ /# $=' #$'/ ' &# ', ' #$V' $' + $0 '* ' 234

5?D5:'2 C '&' -A5' 515:-'4&' 46' A4?D'-2 ?' 2&F' :A*1:A5?(2&F' -A5' E415' F4*+-6* ' 5&F4@E5&-?' 46' E4&2?-51'5? 9' 51' D'5-C' @2?' ?-1'H'&G C' 5JA'+'-5F' '&' -A2-' *&65'G&5F' A*E' '-C' @A':A(2 -A4*GA' -A5' $51C' 5??5&:5' 46' 4*1' 62'-A('?' ?4' 1215 C' 64*&FM' 2&F' E4?-' 1215 C' '&' -A4?5' @A4?5' G'U2-' D4@51?' 2&F' 5J2 -5F' ?-2-'4&?' ?55E' -4' 12'?5' -A5E' 2+4$5' -A5' 5$5 ' 46' 41F'&21C' E41-2 ?' ' 15E21H2+ 5' ' *?-12-'4&' 46' -A'?' '?' 26641F5F' '&' -A5' M*55&0?' :4115?D4&F5&:5' @'-A' 2 2$512(' '&' @A':A' A51' E55H' 2&F' F4:' 5' ?D'1'-' '?' ?-1'H'&G C' :4&-12?-5F' @'-A' -A5' D*1'-2&':2 ' '&-4 512&:5' 46' A51' :4&65??41 6' 5-' 2 2$512(' 2?' @5' A2$5' ?55&(' @2?' ?'&:515(' 2&F' +5&5$4B 5&-' 2-' A521-' ! &641-*&2-5 C(' -A5' 14C2 ' :4&?:'5&:5' @2?' 2-' -'E5?' :4E E'--5F' -4' $51C' F'66515&-' H55D'&GM' 2&F' -A2-' A*E' '-C' @A':A(2?' @5' A2$5' 15D52-5F C' A2F' 4::2?'4&' -4' &4-':5(E2F5' A51' F5651' ?4' 15$515&-'2 C' -4' A51' GA4?- C' 2F$'?51?(5F' *&F51' -A5' 62&2-':' 41M*5.' E2F2(' -A5' :4&65??41' 46' A51' 521 C' C4*-A(' -4' -A4?5' F55D' + 5E'?A5?' 4&' A51' 2FE'&'?-12-'4&(' -A5' 5?-2+ '?AE5&-' 46' -A5' &M*'?'-'4&(' 2&F' -A5' 5J' 5' 46' -A5')5@?

*-(' -A4*GA' + 5E'?A5?' 46' -A5' F55D5?-' FC5' 4&' A51' 2FE'&'?-12-'4&(' -A5C' 215' :51-2'& C' &4-' -4' +5' 15G21F5F' 2?' ?*:A' 4&' A51' E412 ' :A212:-51 ' -' @' ' +5' F'66':* -

I' "$ ' #&$' ' #' &$-' # ' /$ &# "' * $ # "' / L #' A &#' $ # $ ' + $ ' # "'$ /' ? ' #D ' "$ # ? /' G# ?' +$ >' *' ? ' - /#/'&?$ # # ' & #- $'$ # '$ /'& ' >L ' 2B@ .' '$ ' ? ' #& ' /' # '$' ' *' ' 0 D ' ?$' &$ /' ' ' ? ' # $ >' G /' ?$' ' / '& /#' ' ? ' :#$"'"# ' # ' -$" $.' *' d'$-' + '&$ # "' #+/? $/'# ' #' ' "# ' G? ' $' /' ? "?' ? ' +G (' & ' ? ' , ' & >' $'* G' > $ ' $* *$ ' * +' $D# "' J& - # ' $' # ' X' ? ' $ &?0# ? -(' $ ' '# /#&$ ' ? *' * +' ? '" $' ' # '0 ' ?$ ' $' ? +# >' ' ? #+- $ # ' G# ?' $ / " ' *

-4 :4&F5E& A51('&F55F(@'-A4*- :4&F5E&'&G -A5 2G5N 641 -A5?5 $51C 2:-? 215 &4- 4& C 5J:*?5F(+*- 5J-4 5F(+C A51 :4&-5ED4121'5?(2? :4&?-'-*-'&G A51 ?-14&G5?- : 2'E? -4 15&4@&(2&F -4 -A5 G12-'-*F5 46 A51 :4*&-'0C 9 A5C D14:55F5F 614E -A6 D1'&:'D 5 4D5& C 2$4@5F +C -A5 :4*1- 46 4E5(-A2- L52 641 -A5 D*1'-C 46 -A5 62'-A :4* F 2-4&5 641 5$51C :1'E5 A'?'E E412 E2J'E(6 4@'&G 614E -A5 A52F 46 -A5 :A*1:A(@2? 5:A45F '& 2 -A4*?2&F F'66515&- 641E? +C -A5 ?*+41F'&2-5 : 51GC(2&F G155F' C 15:5'$5F +C 2 ?*D51?-'-'4*? D54D 5 6 - @2? &4- -4 +5 5JD5:-5F(-A2- 2 ?4 '-21C @4E2&(6' 5F @'-A &2-*12 F'66'F5&:5 46 A51 4@& :2D2:'-C 4& ?*:A ?*+,5:-?(?A4* F 2112C A51?5 6 2G2'&?- -A4?5 $5&512-5F :4*&?5 41? @A4E ?A5 A2F +55& -2*GA- 614E A51 :12F 5 -4 44H -4 2? -A5 G*'F5? 2&F G*21F'2&? 46 A51 :4&?:'5&:5

6 G ' + # &?# ' ? - $ # *' ? L , # # # +$>?$' 0 # -$# # $0 # ?+

$ $ /' #+- #&# >'G?#&? +$>- ' D '$ +# '# ' ? ' $L / ' U' '$+'G V' ? '& L & / ' R' ?$' & +' &$ ' +$D ' $ ' $& # ' 0$/' # ' # *' " /:0 ' 'G# ?' > ' -# # ' G? ? ' / ' $ ' ? '&# & +L $ & ' ? ' &$ '0 '& #/ /' 0$/< ?$ ' #*' ' ? >' +$>' 0 ' /# & # /' # ' * V' ' ?# ' & # 'N& - / & ' # ' +' / ' &$/' +' '#' ' J### I' &?' & +# + ' 0 & + ' # ' + ' #D# '" # ' G # ' *' &?' /' $ /' J-$ #' ''# G ' $ '9 # $' $ /' $ &$ 'G? '$L ? "?' * # ?# '" # ' $ 0 ' :'

& /' $" ' / ' ' & - ' ' - & ' ? ' , # # # ' U' ? ' " $ ' '#/ & ' *? '- / & 0 $ /'-# >'G? ' & + + ' #L # >' ' >' -$# '0 '$ ' ? # L / +' * >' $& + G /" /% V' $ && ' + + $ ## ' - 'FB4 A ' 9 # $' $ ' + ' ' ' #0' #' &$-' '# ' # + /# /# - $>' ? ' +# L &?# ' '# * & ' *' ? ' ? L "#&$' / "+$ ' # ' $ >' $ ' G ' $ ' -$# ' / ' ? ' - #*#&$ ' *' J$ / ' : '$ /'?# '# + + L /#$ ' - / & ' # ' &?$-' J&' *'?# ' , ' $ /' -?# -?#L &$' W 6# # ' / ' - 0 #, ' $ # 0

; S 0 6

'& D4'&- 46 D1'&:'D 5(@2?0 &4- @41?5 -A2& E 2&C 4-A51 E52?*15?(^$A':A A2$5 D2??5F @'-A 621 5??:5&?*15(-A4*GA '& 2 E*:A E415 2F$2&:5F 2&F :'$' '?5F 2G5 9 ^ A515('&F55F(F*1'&G -A5 ?'J-55&-A(2&F -A5 G152-51 D21- 46 -A5 ?5$5&-55&-A :5&-*1C(@2? -A5 D1'&:'D 5 46 D51?5:*-'4& 2+2&F4&5F +C -A5h F4E'&2&- D21-C(@A5-A51 2-A4 ':41 14-5?-2&-0 &F @A515 -A2- 46 -4 512-'4& 2??51-5F(5J:5D- +C -A5 @52H510 - '? -1*5(-4 +4114@ ?2+5 20? 4@& 5JD15??'4&('& A51 5--51 -4 2 2$512(-A5 D15$2 5&:5 46 2 +2F :*?-4E :2&&4- :4&?-'-*-5 '-? 2D4 4GC % +*- '- ?A4* F ?51$5 E*:A -4 E'-'G2-5 4*1 :4&F5E&2-'4& 46 -A5 M*55&(-A2- ?A5 65 '&-4 &4 G152-51 51141('& -A5 'ED5165:- 'GA- '& @A':A ?A5 '$5F(-A2& @2? :4EE4& -4 -A5 G152-5?- E'&F? '& 2 2-51 2&F 621 1'D51 D51'4F 6

?2+5 20? 2:-'4&?('&F55F(@515 A2+'-*2 C +2?5F

0 G $ + ? G / X ' # #?# $> *6$ $+ G? #&# '" ? - $ $ '$"$# $?L #& / #K$0 ?$> U ?>" + - ?$- ? G /?$/ ? G# /#0 ?$*# L $0 # ? /$ - & # G?#&? & $#0 >G /J& / * $$$? #- # &#- *?$*G?#&? ? , ### - 0#" /, #/$$ ' 0 J # -$ /&? G ?/$/ 0 & + /# V L ?& / '# G *?#"? *& &# & $ 6# >*" $ /' &?### . ' /L $ 0 J # G *?#"? *& J$+# $ # $/ - /# & L #"?& + + # " ? + / $# &$ 0>? ?6#"? + +# L $?$*?'"#* /& # & / ? # $ +=>0> *?"& +# / G? J $ /# $> L $?# "$ # G !& # > - / * *'$ &?$ $ /0 $ &? $ &# & + $ & $? ? "?? ? # , ## *D G /" "0 * #?$/ -$# /+$ >, L *$? # & +- ? /$ /$- ? # - > V 0#/&?$-#'

A51 4@& @' @2? 2@(K ?2C? 5-51 21-C1(R ?A5 G4$51&5F '& ?*:A 2 E2&&51 -A2- '- E 'GA- 2DD521 -A5 ,4'&- 2:-'4& 46 +4-A 51F'&2&F 2&F A51?5 6(K C5- ?A5 @2? :2156* &5$51 -4 ?*115&F51 '&-4 A'? A2&F? 4&5 46 -A4?5 D1514G2-'$5? @A':A +5 4&G5F -4 A51 2? M*55& D14D1'5-41 46 -A5 H'&GF4E 9

?2+5 2 E52?*15? @515 :A212:-51'?5F +C -A2- D12:-':2 G44F ?5&?5(@'-A4*- @A':A -A5 E4?- +1' B '2&- D21-? E2C @41H E415 -4 -A5 @45 -A2& -A5 @52 46 E2&H'&F A4*GA 5&G2G5F 2 A51 '65 '& 15641E?(?A5 A2F &4&5 46 -A5 62' '&G? ?4 :4E E4& '& 15641E51? 51 D 2&?(-A4*GA $2?-(@515 &5$51 $'B ?'4&21C A5 +5?- D1446 46 -A'? '?(-A2- ?A5 '$5F -4 ?55 E4?- 46 -A5E 152 'L5F

A5 @2? M*':H -4 F'?:51& 4+,5:-? 46 152 *-' '-C A5 ?2@ -A5 'ED41-2&:5 46 -A5 &5@ F'?:4$51C 46 D1'&-'&G(2&F '+512 C D2-14&'?5F '-(614E -A5 6'1?- E4E5&- '- 2DD5215F 6 A5 A2F &4&5 46 -A5 5J: *B ?'$5 4:2 D15,*F':5?(-44 :4E E4& @'-A A51 :4*&-1CB E5& A5 F15@ -2 5&- 614E -A5 E4?- 15E4-5 M*21- -51? -4 A51 F4E '&'4&?(+C E *&'6':5&- 15@21F? A5 'ED41-5F 6415'G& 21-'?2&? 641 A51 E2&*62:-*15?N 6415'G& 5&G'&551? 2&F 46'':51? 641 -A5 F'?:'D '&5 46 A51 2112CN 2&F 6415'G& ?:A4 21? -4 'E+*5 A51 E21-'2 ?*+,5:-? @'-A E415 :* -'$2-5F -2?-5? A5 :4&?* -5F -A5 *?56* '& 2 A51 ?*+41F'&2-5 15G* 2-'4&? N '& A51 ?*ED-*21C 2@?(641 '&?-2&:5(F'15:-5F 2G2'&?- -A5 62?A'4&2+ 5 5J-12$2G2&:'5? 46 F15??(2&F -A5 1*'&4*? 4?-5&-2-'4&(?4 E*:A 2665:-5F +C -A5 2?-' '2&? '&

1 - -# -JJJ#M
X +/ &$/ / 6# + '#-=

-A5'1' @5FF'&G?' 2&F' 6*&512 ? 9' 2?- C(' ?A5' ?A4@5F' -A5' ?2 E 5' D51?D':2:'-C' '&' -A5' ?5 5:-'4&' 4 6' A51' 2G5&-?' M' @5 ' H&4@'&G' -A2-' -A5' +5?-' E 52?*15?' +5:4 E 5' +2F' '&' '&:4 E D5-5&-' A2&F?

' *-' 2 -A4*GA' -A5' ?H' 6*' ?5 5:-'4&' 4 6' A51' 2G5&-?' @2?' 2&' 4+$'4*?' :2*?5' 4 6' ?2+5 2"?' ?*::5??(' C5-' 2&B 4-A51(' 5$5&' E 415' 'E D41-2&-(' '?' -4' +5' 64*&F' '&' A51' 4@&' $'G' 2&:5' 2&F' *&-'1'&G' 5J51-'4&?' *1'&G' -A5' 6'1?-' +*?C' 2&F' +*?- '&G' C521?' 4 6' A51' 15'G&(' -A5?5' 5JB 51-'4&?' @515' 4 6' '&:15F'+ 5' E 2G&'-*F5' A5' @2?' 2 B E 4?-' 2 @2C?' '&' -A5' ?2FF 5(' 641' ?A5' E 2F5' 2 ' A51' ,4*1&5C?' 4&' A41?5+2:H' 2&F' ?A5' -12$5 5F' @'-A' 2' 12B D'F'-C' @A':A' E 2F5' A51' 2 @2C?' D15?5&-' 4&' -A5' ?D4-' @A515' A51' D15?5&:5' @2?' &55F5F' A5' @2?' &5$51' '&B -'E'F2-5F' +C' -A5' @52-A51(' 41' -A5' ?-2-5' 4 6' A51' 4@&' A52 -A(' 2&F' -A'?' 15:H 5??' 5JD4?*15' *&F4*+-5F C' :4&B -1'+*-5F' E *:A' -4' 'E D2'1' A51' 5J:5 5&-' :4&?-'-*-'4& "P"

I' ?' - $+0 ' *' ' *'? ' ' ; ($"$# ' ?#' $'# ?' J- /# '$'* $ '& $# ' + ' * &# ' G ?', # '" * ' ? ' '#/ &' ? >'$** /' *' ? ' - $& #&$' " /' ' U' ' / $ /' - ' ' ' + /#$'$' $' "$ ' #' - ' &? ' ' & =' #/ $ /' , ' ' ' / /$' ' * $"#' ' $#'# ' / ' $' $ #=' +$' /' ' / * V' Y&' ' ' ' ! ' ' ' &$ #& ' # #$ ' , '& + ' , ' ?$# $' '#/$' / - ' / $'/ / ' $' $ #+$' - $'* "$ K$' '#/$' - / L $0 ' (' (' ') ' ' ' ' ; ' ' ' ((& ' '' ' ((' P' (' ' + (' ' (' (

) (' ' ; ((' M (+ (<' 0#/' - 423 1' 6 ' J- ' # ' ?# ' G$>' ' ' &&$ # ' 0 "?' ' $' +# &$ #$" ' && /# '" ' 8 L + K'# / /' ?' *# $ >' /# /' *' $' & ' &&$ # /' 0>' ? ' '" $ /' $0 # ' ! > ' U' =' #/ +' ' ' & / +' & ' , /' J' $ #/ #' $/' 8 $ $ $+' , # $ # #0 '& $J# '$# ' + #* ' - 0$ V' ' 0' 8 #' H#+ '* '() .' 8# '#' $/ - ' ? ' $+ '$&& ' :# ' ' :# + ' -' F)@ .' ? ' $? ## ' $ '" /' & $# >M' 0 ' $ > ' G? ' G$' # ' ? ' -$ $& ' G# ?' ' >' -- # >' * '& &'# * +$ # '$ /' G# ?

A5' @2?' 5M*2 C' '&F562-'G2+ 5' '&' A51' E5&-2 ' 2DB D ':2-'4&' 6-51' 2??'F*4*?' 2--5&-'4&' -4' +*?'&5??' -A14*GA' -A5' F2C(' ?A5' @2?' 46-5&' H&4@&' -4'?'-' *D' 2 ' &'GA-(' F':-2-'&G' F5?D2-:A5?' -4' A51' ?5:15-21'5? 9' &' -A5' E'F?-' 46' -A5?5' 4$51@A5 E'&G' :215?(' ?A5' 64*&F' -'E5' -4' ?*DD C' -A5' F565:-?' 46' 521 C' 5F*:2-'4&' +C' 521&'&G' 2-'&(' ?4' 2?' -4' *&F51?-2&F' '-'@'-A4*-' F'66'B :* -C(' @A5-A51' @1'--5&' 41' ?D4H5&№ 2&F' '&F55F(' '& -A5' 4D'&'4&' 46'2' :4ED5-5&-',*FG5(' -4' 2--2'&' 2' :1'-':2 ' 2:::*12:C' '&' '- 6' ?' ?A5' A2F' '-- 5' -*1&' 641' 'GA-' 2E*?5E5&-?(' ?A5' ?4*GA-' 15 '56' 614E' G12$51' :215?' +C' ?4E5' *?56*' 4:::*D2-'4&' 2DD14D1'2-5' -4' A51' ?5J'№ 2&F' ?A5' 56-' 2ED 5' 5$'F5&:5' 46' A51' ?H' ''&' -A'?' @2C'&' -A5' 1':A' ?D5:'E5&?' 46'5E+14'F51C(' @14*GA-' @'-A' A51' 4@&' 62'1' A2&F?(' @'-A' @A':A' ?A5' F5:412-5F' -A5' :A*1:A5?' A5' @2?' :2156*' -4' '&?-1*:-' A51' F2*GA-51?' '&' -A5?5' E415' A*E+ 5' F5D21-E5&-?' 46' F4E5?-':' F*-C№ 641' ?A5' -A4*GA-' &4-A'&G' -44' A*E+ 5' -4' 521&(' @A':A' @2?' *?56*

'-A' 2 ' A51' A'GA' M*2 '6':2-'4&?(' ?2+5 2' @4* F

' $ '* '& & $ + ' *' ?' $" ' $& ' " ' '& "#$V' ' ?'#'?#'-#'$ '& - /L 0#/'$-' K' > $' $ ' &'G#?' /#$'$ /' $$-' +'##'-'34(' $' +$D ' '$ # 'G?$L P' *'G'$ ' '0 # ' ' K' ' ' '3 &?b'& +-$#'#'?#' ?'D# "'G ' ' ?# '0 ' *' &# & + $ #$' $&& ' *' ?' ?', ℃' +$D# "' U &#$-' , ℃'# 0$ ' /' ' ?$' ' - ' ' I' $' +'##'-'(22' +$ #/'&$+# $', ' ' ' ?-' A= +'/' &$/'/'6# ' +' +$ #/'&$+# $', ' ' ' ?-' '#' ?# $/'*'& #/ V' +'##' '#' -F5 -'34F.' P*' !#'0' $D ' # L *' ' #& ' $'Q ' $ >' ?#' fG$ / 0'& #/ # "' ' 23F'A'U' &#0' & ' ?'+ # /' *'?' $' &$ # ' - #+ ' ' $ # '>' $' $' ?$0 ' + ' ?$' ' 0 ' # /#** >' ' $' - /#$', ' # 0 * # ? /

A2$5' +55&' ?-' ' *&5M*2 ' -4' -A5' 2:A'5$5E5&-' 46' A51'
G12&F' F5?'G&?(@'-A4*-' D4??5??'&G' 2' F5G155' 46' 641-'B
-*F5' 1215' '&' 5'-A51' ?5J'N' &4-'-A5' :4*12G5' @A':A' 'EB
D '5?' :4&-5ED-' 46' D51?4&2 ' F2&G51(> -A4*GA' 46' -A'?'
DA5' A2F' 2' 21G51' ?A215' -A2&' 62 ?' -4' E4?-' E5&N'9' &41'
-A2-' @A':A' ?*DD41-?' '-?' D4??5??41' *&F51' -A5"5J-15E'B
-'5?' 46' +4F' C' D2'&(> -A4*GA' 46' -A'?' ?A5' G2$5' 2ED 5'
5$'F5&:5(?'&:5' ?A5' 5&F*15F' -A5' G152-5?-' ?*6651'&G' A51'
?5J' '?' :2 5F' -4' +521(@'-A4*-' 2' G142&N'6' +*-' -A2-'
E412 ' :4*12G5' @A':A' ?*?-2'&?' -A5' ?D'1'-' '&' -A5' F21H'
A4*1' 46' 2F$51?'-C(2&F(G2-A51'&G' 'GA-' 614E' @'-A'&'
-4' F'?D5 ' -A5' F21H&5??('ED21-?' '-?' 4@&' :A551'&G' '&B
6 *5&:5' -4' 2 ' 214*&F ' A'?' @2?' ?A4@&' 15E21H2+ C'
'&' -A5' ?-41EC' ?52?4&' @A':A' *?A515F' '&' A51' 2::5??'4&(
2?' @5 ' 2?' -A14*GA' -A5' @A4 5' 46' -A5' 441'?A' @21 '
-' @2?' A51' $4':5' -A2-' F5:'F5F' &5$51' -4' 2+2&F4&' .'
A2E2.-' 51' 15E4&?-12&:5?' :4ED5 5F' -A5' H'&G' 2&F'
&4+ 5?' -4' 05-*1&' -4' -A5' 6'5 F(@A5&' -A5C' A2F' M*'--5F'
'-' 26-51' 2&' '&5665:-*2 ' :2ED2'G&' ?' F2&G51?' 2&F '
F'66':* -'5?' E* -'D '5F(?A5' E* -'D '5F' 15?4*1:5?' -4

I' + '" +$ >' '#/ & ' *' -$ ' , ' ' & $' /' " $ /'
?# ' G?$' ? ' /' 0 '"#' ' $/+# $&# .' &$' $' '# '
?$ '? ' & / &'$' ? '*$+ ' , J$' ' $ ' & '# & >0 '
'$' " '#$'_ $ '#T&?$-' >' +$ $'# $* $ K$' ' ** #$'
'#' *' ?#' 6# > >' /# #+ $'$V' $' =
X' "$ ' #&$' '#'&$-' + ' * ' 23B .I' ' ?' $+'
#' AR ' * ' $' > $R' $>' ** &' G # ' ?' $ >+ '
$#$ ' #& ' R'/' $ #+' $? ' *' ?' $ ' /' $' L
+ ' * ' -$ $' * #' ' / =' $ ' $-' + ' /' &$/' +'
' & - $ ' , ' & +' '#'-' @@5
> ' * >' # * +$/' /' $' / $' * R $' *# + ' ' ' - =
, ' ' '#$' ' $'&$+$ $' # - # ' /' ' , $ ' ' $#'
' ' / ' , ' -$/ &#$ /' & ' " $ ' /#*#&#/ $/ R' "$'
' * +#/$/ ' # ' ' / #&$' '#' &$-'#'

E 55- -A5 E N 2&F @A5& A51 ?4 F'51? 2C F144D'&G *&F51 -A5 5$' ? 46?4 E 5 4&G D14-12 : -5F ?'5G5(?A5 2DB D5215F '& -A5 E 'F?-(E 4 *&-5F 4& A51 @21.A41?5(@'-A A51 F5 ' : 2-5 'E +? : 2?5F '& H&'GA- C E 2 ' (9 2&F(1'F'&G -A14*GA -A5'1 12&H?(+152-A5F &5@ : 4*12G5 '&-4 -A5'1 A521-? +C A51 4@& '&-15D'F +521'&G 4 A51 D51?4&2 5664 1-?('&F55F(2? @5 2? : 4*&?5 ?(-A5 ?* : : 5?? 46-A'? G 41'4*? @21 E 2C +5 E 2'& C ' E D*-5FN 2&F -A5 *&?*?D' : '4*? -5?-' E 4&C 46 -A5 5&5-'2& E '&'?-51(2$2G'514(2 65@ C521? 2-51(?A4@? -A2- -A5 &2-'4& ?4 : 4&?'F515F '- R b*55& ?2+5 (K ?2C? A5(R +C A51 ?'&G* 21 G5&'*?(E 2?: * '&5 ?-15&G-A 46 E '&F(2&F 4-A51 $'1-*5?(E 4?- *&*?*2 '& 4*1 4@& ?5J(2? @5 2? A51?(@2? &4- E515 C 46 G152- 2??'?-B 2&: 5 '&(+ *- -A5 : A'56 : 2*?5 46(-A5 : 4&M*5?- 46 12B &2F2 A5 @2?('&F55F(2 E 4?- 1215 2&F $'1-*4*? 2FC(4&5 46 @A4 E -A5 D2&'21F? -2 H 621 E 415 -A2& 46 -A5 H'&G(?2G2 : '4*? 2? A5 @2?(2&F *&: 4 E E 4& 641 U'? -'E 5 K 6

2DD' C -A5?5 E 2?: * '&5 M*2 '-'5? '& ?2+5 2 F'F &4- 5J-'&G*'?A -A5 ?46-51 4&5? @A' : A : 4&?-'-*-5 -A5 : A21E 46 A51 ?5J 51 A521- 4$516 4@5F @'-A 26B 65 : -'4&2-5 ?5&?'+' '-C -4 A51 62 E ' C 2&F 61'5&F? A5

I ? $/ #'+$> * ? ?# & & # * $ (" $& * D &? * +# #$ # #+# $ G$ #D -$ - > U / # #+ $&&#$ - + / ** / / #&$ & ($ &?# +$< $ +$ & / - /

-- " $' # - $0# +$ # $ /# * # + - / # $ +# # $ $ / +$ V 8 $ + + #0 $ $ & '# 5F : #$""# # -$" $ * F)

@2-:A5F 4$51 -A5 F5: '&'&G F2C? 46 A51 2G5F E4-A51(2&F E'&'?-515F -4 A51?2F '&6'1E'-'5? @'-A 2 -A5 F5B ':2:C 46 6' '2 -5&F51&5?? 9 5 A2$5 ?55& 2+*&F2&- D1446? A4@ 64&F C 2&F 62'-A6* C ?A5 4$5F A51 A*?B +2&F -4 -A5 2?-(6 -A4*GA -A'? 4$5 @2? &4- 2 @2C? 2? 62'-A6* C 15M*'-5F= 41 A51 :A' F15& ?A5 '$5F E415 -A2& 641 A51?5 6N 2&F 641 -A5E -44 ?A5 F'5F(641 '- @2? -A5'1 4?? 2&F -A5'1 266 ':-'4&? @A':A 614L5 -A5 :*115&- 46 A51 + 44F(+56415 2G5 A2F -'E5 -4 :A' '-

I 7 *# / *? *# 1$ #& # ? +$ #$" $ > G# ? /# $ / ! # # "# ?#+ &? # ? $ / $? + ? G# ? $ ' & $ / - L '#/ # $0 > * ? >$ +$# $ & + / $ &$/ / 6# + '# - / 2 . ? $? *? ? $ / $? #& ? / ' / ' / ? -$ $ $ $ - # / ! + / #! , # '#/ - +, - # ! , $ > $ $0 $ $ & $ / 0 $ ## ' '$ '# # $ / $ +$/ $ +# +$ - $ - $ '#$ $ +# L +$ +$/ $ $, # + ! +- - ?#! & + 0$ / '# $ -$/ - #+$ # $ $ - / $ > " &# $ $ $ / - $ M + $ / $*# - / $-$ > - - . #0$ $ '# # $ +$>/ $ '#$? +# + V 0#/ - @@) + "" ? # ,D * + $ $** & # # +$>0 + # / ?$ > ? - 0 #& # 0 ? # * #

0 D $ / ? $ #& *- L $ - - > G $+- / G# ? ? # # # #$ $ / +0 $K /G# ? ? # / '#& ?# 0 # " $ > D $ / ? $? $ * $ G ; # & $M - $ $ 2 , # & F /#$ 4 . G$ & + + , > '# / * $&? -$ > $D $ / '#& G? # # #$ & - /L /G# ? ?$ * ? $+ * ? ? < $ G$? ? &$? G# ?4) ; $ / @ ($ # ? - $D * ? , (/# & $ / + $+#$0 & / & # ? / L #&$ +$ R +$'$ $ $ $ +$ $ $ $ > +$ #/ , $ /$'$ 0 $'# & & - $ $ ' # #$, +# $'$ $ $ " $ /$+$ / K $ / &$ $ & ## $ / $+ & + &?$ - / &#$ 0 &$'$ + /# > +$ $ & , / - /# $, - $ $ - $ / &$ $ & + &?$? $ >- ' &? V - $ + * 23F . ? G$ #+* $ > + &? &$ * ? # $ # $ ##&? JJ# * ?# 6# >

51 5J2 -5F ?-2-5 F'F &4- 15E4$5 A51 2+4$5 -A5 ?CEB D2-A'5? 46 6'0'5&F?A'D 9 '-A A51 5&F? ?A5 641G4- -A5 *?*2 F'?-'&:-'4&? 46 12&H(?A21'&G '&-A5'1 ,4C?($'?'-'&G 2&F :4&?4 '&G -A5E '&? ?4114@ 2&F ?':H&5??(2&F :4&F5?:5&F'&G('&E415 -A2&4&5 '&?-2&:5(-4 2?B ?*E5 -A5 46 :5 46 5J5:*-1'J 4& -A5'1 F5:52?5 6 51 A521-('&F55F(@2? 6' 5F @'-A +5&5$4 5&:5 -4 2 E2&B H'&F &-A5 E4?- 6'51C A52- 46 @21 ?A5 @2? 5&B G2G5F '&F5$'?'&G E52&? 641 E'-'G2-'&G '-? A41141? A5 '? ?2'F -4 A2$5 +55& -A5 6'1?- -4 '&-14F*:5 -A5 +5B &5$4 5&- '&?-'-*-'4& 46:2ED A4?D'-2 ?N 2&F @5 A2$5 ?55&(E415 -A2& 4&:5(A51 '$5 C ?4 ':'-*F5 -4 ?D215 -A5 566*?'4& 46 + 44F 5$5& 46 A51 5&5E'5? *-'-'? &55F 5?? -4 E*-'D C 5J2ED 5? 46 -A'? +52*-'6* +*- 62E' '21 -12'- '& A51 :A212:-51)

I ? 0 0 ' / *? * # / - 0$0 > G$? $L &?# *> G? / + -$ $ /* +? >$ +# ? "? #* ?$/ ? + $ &? > $ 0*$& # *& # " ? > # / $?' '# / G? $G ? +* , > " ? $> ?$? , ' $// / ?# $/> ' '# $ #* ' # ? $ > ? ?$? / $ # " # * 4 I) (& /$ "? +$ &?# ; # & $" $ $'2', # &'2 /#$ 'F4 X 'G$? '&$ 'G# ? $L / $? '& + /$/ +$> $ /' ? '8 $ /' $ /# $' / L K$' 'G? + '$ 'G '?$' '$ $/> = ? -$#/ ? 'D# / $L # / # " ? # ' $ 7 ?# '# ' ?# 'G$> ? '# / " /' ? ' $ $' /#& $ *? '? $? 'G$ ' &$ * / ' >

G$ /' +$ D *- & ? + + > * ? 'G? $ D '#& # /' ? +' &? '& #/ $# R'; $ / R $> ? ' $? * , / U', # $, '*$ &#$ $ " / '" $ / '/ ' > '$ " - # &#- ? # #$ " + 0#$'$ ' '$ $0# > #= "# -$ $ & $ ' $ 2 ? / '>/ / ' / +$ ' / ' ' #$ ' / ' -$ ' / #+ # ' / ' > #+# ' , ?$K#$ V # & '* '23@ 6 '? +$ # > G$, ? G # ' ? ' $ +- ' +# #"$ ' ? * &# '&?$ $& ' *? ' $L # $' $+ + M ? ' 0 L *#"? 'G? '- - $ # > ? "?M ' ? '& +# > G$ ' " $ $' ? '# #+$ ' # ' ' *? ' $/ +#' *'? '$0 # ?=

F55D' F'??'E * 2-'4&(2&F' ?-12&G5' '115?4 *-'4&' ?2B +5 2(4&' -A5' 4-A51' A2&F(-5ED515F' -A5' F'G&'-C' 46' 14C2 ' ?-2-'4&' @'-A' -A5' E4?-'+ 2&F' 2&F' :4*1-54*?' E2&.' -'51?' &:5' 15?4 $5F(?A5' @2?' :4&?-2&-' '&' A51' D*1B D4?5?'N' 2&F' A51' :4&F*:-' '&' D*+ ':' 2&F' D1'$2-5' '65'@2?' :A212:-51'L5F' +C' :2&F4*1' 2&F' '&-5G1'-C ' 4-A' E2C' +5' ?2'F' -4' A2$5' ?A4@&' -A2-' E2G&2&'E'-C' @A':A' '?' 'ED 'F' +C' -A5' 2::4ED '?AE5&-' 46' G152-' 4+,5:-?' '&' -A5' 62:5' 46'G152-' 4+?-2: 5?' *-' 'L2+5-A' @2?' F5B ?D512-5 C' ?5 6'?A'N' ?A5' @2?' '&:2D2+ 5' 46' 641G'$'&G(&4-' E515 C' 2' 152 ' '&,*1C(+*-' -A5' ? 'GA-5?-' 26614&-' -4' A51' $2&'-C'N' 2&F' ?A5' @2?' E51:' 5?? '&'5J2:-'&G'15-1'+*-'4&' ?2+5 2(4&' -A5' 4-A51' A2&F('$5F' 4& C' 641' 4-A51?(> ' @2?' 152FC' 2-' 2 ' -'E5?' -4' ?2:1'6':5'?5 6' -4' :4&?'F512-'4&?' 46' D*+ ':' F*-CN' 2&F(?4' 621' 614E' D51?4&2 ' 15?5&-B E5&-?(?A4@5F' -A5' G152-5?-' :4&F5?:5&?'4&' 2&F' H'&FB &5??' -4' -A4?5' @A4' A2F' E4?-' ?5&?'+ C' '&,*15F' A51N' @A' 5' A51' +5&5$4 5&-' A521-' ?4*GA-' 5$51C' E52&?' -4' E'-'G2-5' -A5' 2*-A41'L5F' ?5$51'-'5?' 46' -A5' 2@(5$5&' -4@21F?' -A5' G*' -C 9

4-A' D4??5??5F' 1215' 641-'-*F5' ?2+5 2('&F55F(@2?' D2:5F' '&' ?'-*2-'4&?' @A':A' F5E2&F5F' E415' 615B M*5&-' 2&F' A'GA51' F'?D 2C?' 46' '-' -A2&' A51' 1'$2 N' +*-' A4' 4&5' @' ' F4*+-' 2' 6* ' E52?*15' 46' -A'?' M*2 '-C' '&

I' ?'"$' ' '#/ &' *' ?#' 0 />%V' '? ' ' ' $=' # ' ?' & ++ $# ' *' ?' $' $.' ?' ? G /' ?#' + L & ' ?' 0 $# /' * ' ?' &#* ' +- ' ' $ ' # ' ?$' 1G &? G?' $00 /' ? ' ? L "?' $" ' 0>' /# - # '" $ L 0$ /' $ /' G? +' ? ' * &# ' " ? I' G# ?' ? ' - #+# $ >' 0 ' G /'?$' ' - ' / $?' 0$ 0$ # # ' + #+ ' - & #0L G# ? ' ? ' -- #>' *'& L /' 0>' ? ' $G' # ' &$-# $' J & L * # '$ /'$0 # ' ?$' U'?#' # ' +/ ' $' ' &$/ ' / ' ' +#"?' - # ?' G# ?' ?# 6# ' +' '#' ' J###

-A5 F2*GA-51 46 5&1C 'L2+5-A @2? +5--51 5F*:2-5F(2&F 5$51C @2C E415 A'GA C 2::4ED '?A5F(-A2& ?2+5 2 +*- -A5 2--51 H&5@ 5&4*GA -4 E2'&B -2'& A51 ?-2-'4& @'-A F'G&'-C 2&F ?A5 5&:4*12G5F 521&'&G +C 2 E*&'6':5&- D2-14&2G5 9 A5 E2?:*3 '&5 D4@51? 2&F D2??'4&? 46 'L2+5-A ?55E5F -4 F'B $41:5 A51 '& 2 G152- E52?*15 614E -A5 D5:* '21 2-B -1'+*-5? 46 A51 ?5J(2- 52?- 614E -A4?5 @A':A :4&B ?-'-*-5 '-? D5:* '21 :A21E 641 ?A5 A2F 2+*&F2&:5 46 '-? 64'+ 5?(> 2 :4M*5-1C 2&F 4$5 46 2FE'12-'4& @A':A 2G5 :4* F&4- :A' 2 5$'-C(E4?- :215 5??('6&4- :1'E'B &2 6 2&F 2 64&F&5?? 641 F15?? 2&F -2@F1C E2G&'6'B :5&:5 46 41&2E5&-(@A':A @2? 1'F':* 4*?(41 F'?G*?-B '&G(2::41F'&G -4 -A5 F'66515&- D51'4F? 46 '65 '& @A':A '- @2? '&F* G5F U ?2+5 2(4& -A5 4-A51 A2&F(F'?.

I 6 + $/+# ? $ U L ?$--# > * # $ $ * ? $ /* ?# $" ; #K$0 ?0 '$ # > $> + # ? # " 0> ? G $ # " ?$ # & $"# " + *" L # 0> ? #0 $ # > V 7 ?#&? *? G ? $/ *? & / *? #+ +$> 0 + G?$ - KK / / +# A * /0 & '# & /? G +$ > *$& ?# L > &$ G $ $ /? G /#**#& # # " $? ? ?$ > & +-$ # =" $ /($&& *? #" G# ? &? 0#, # > G$ 0 J- & / # / / * + ? $' G /$- "# *$ - & /-$ > #D ? * + G # # $ $&? * $? $ # + ?$ # $ & A$ # ? #" * #&?$ / * J$+- # - & /* + ? / # $>L # " + ?# " G $ 0 $ -#& G? ? ? G &$ $ G$> 0 $ _ ?$ # + - 0$0 * + ?$ & *#/# " 0 ' & G?#&? ? G + L G?$ *# G #"? ' ? ? /$ D ?$/ *? +$ &?$L $& _ ? - ! /#& / $/ +$> - ?$- $" ?$? 0$ $ & * ?# " $, " / $ / 0$/ , $ # # ? / G# ? $ + $/> $ /#+-$ L #$?$ / 0> 6$ $+ ?$ $ > - & /# " G # P ? -#&# #+ > *? " / 6$ # " - $& ? * #0 # ? + /#L & #"? *? G =D G > - $ / 0> $ *? ? ? $ / / * # ? G$ / 0 $? / & $ 0

;

-'&G*'?A5F -A14*GA '65 641 F5:41* E 46 E2&&51?(2&F D*1'-C +5C4&F -A5 +152-A 46 :2 * E&C(@2? :4&-5&- @'-A -A5 5G'-'E2-5 2665:-'4&? @A':A ?A5 :4* F '&?D'15 @'-A'&-A5 12&G5 46 A51 F4E5?-':':'1: 5 21 614E 2 61'$4 4*? 2665:-2-'4& 46 41&2E5&- 41 F15??(?A5 @2? E4?- ?'ED 5 '& A51 4@& 2--'15(2&F ?55E5F -4 ?5- &4 $2 *5 4& A51 ,5@5 ?(+*- 2? -A5C :4* F ?51$5 -A5 &5B :5??'-'5? 46 -A5 ?-2-5 N9 @A5&-A5C :4* F +5 &4 4&G51 *?56* '& -A'? @2C(?A5 G2$5 -A5E 2@2C(2? @5 A2$5 ?55&(-4 A51 61'5&F?

4-A @515 *&:4E E4& C ?2G2:'4*? '& -A5 ?5 5:-'4& 46 -A5'1 E '&'?-51?N -A4*GA 'L2+5-A @2? F12@&'&-4 ?4E5 51141? '& -A'? D21-':* 21 +C A51 5$'-C(6 2? @2? ?2+5 2 +C 15 'G'4*? 655 '&G -@2? -A'?(:4E+'&5F @'-A A51 5J:5??'$5 A*E ' '-C(@A':A 5F -4 -A5 /'& C G12$5 511@? '& -A5 2FE'&'?-12-'4& 46 -A5 2--51 51 1'$2 65 '&-4 &4 ?*:A 51141?N 2&F ?A5 @2? 2 ?-12&G51 -4 -A5 2E'2+ 5 M*2 '-'5? @A':A 5F -4 -A5E 51 :4&F*:-@2? :51-2'& C&4-:4&-14 5F +C 15 'G'4*? D1'&:'D 5N 2&F(-A4*GA -A5 +* @21H 46 -A5 14-5?-2&- 62'-A('- E'GA- +5 F'' :*- -4 ?2C @A5-A51 ?A5 @515 2- A521- E4?- 2 14-5?-2&- 41 2 2-A4 ':A5 $'5@B 5F -A5 @A4 5 '&'-?:4&&5J'4& @'-A-A5 ?-2-5 N '&4-A51

' ' $ ' ?'#'$** /'$ + # ' ? ' $+ ' *6$ ' # " $'& $ 'G# ?' $0 $C' $ /' #& '0 ?' & ++ /L $ '#' ? '+$ /' ' ?'*# ' **#& '#' ?' $ ' &?# *>'0>' ? #'- $' $ $&L I' ?' $/ 'G# ' + +0 ' # ' $ /' ?' $ ' *'G? +' ? G ** & $ >' ? >' $ G /' & # /' '+$# $# ' ? '?#"?L ?#'- - '#' ?' # ?'G$ ' ' $ ' &?$-' J#'' *' ?#' - $& '#'?#' ' #" C'*$' ' 6# > * ' ?# >'> $ ' + '#'/ L -# ' *'?#' $'/ # # ' *' '#'&$ & >M & $ >' $'+ $'G ?

@41F?(@'-A' A51?5 6% 2&F' ?A5' -44H' E52?*15?' 641' 5&B 641:'&G' :4&641E'-C' -4' A51' 4@&' $'5@?(&4-' 2' @A'-' 5?? F5?D4-':(2&F' ?:21:5 C' 5?? ?2&G*'&21C(-A2&' -A4?5' :4*&-5&2&:5F' 641' :4&?:'5&:5 ?2H5' +C' A51' E415' +'B G4-5F' 1'$2 9

A'?' 652-*15' 46' +'G4-1C(@A':A'A2?' -A14@&' 2' ?A2F5' 4$51' ?2+5 2 ?' 4-A51@'?5' +52*-'6* ' :A212:-51((E 'GA-' 52F' -4' 2' F'?D212G5E5&-' 46' A51' '&-5 5:-*2 ' D4@51' :4ED215F' @'-A' -A2-' 46'-A5' &G '?A' M*55& ' 4' 5?-'B E2-5' -A'?' 21'GA-(@5' E*?-' :4&-5ED 2-5' -A5' 15?* -?' 46' -A5'1' 15?D5:-'$5' 15'G&?' 'L2+5-A' 64*&F' 2 ' -A5' E2-51'2 ?' 46'D14?D51'-C' 2-' A2&F(2&F' 2$2' 5F' A51?5 6' 46' -A5E' -4' +*' F' *D' 2' ?4 'F' 62+1':' 46' &2-'4&2 ' G12&F5*1 ' ?2+5 2' :152-5F' -A5?5' E2-51'2 ?' A5' ?2@' -A5' 62:* B -'5?' 46' A51' D54D 5' 4:H5F' *D' '&' 2' F52-A. 'H5' 5-A21GC(2&F' ?A5' +152-A5F' '&-4' -A5E' -A5' +152-A(46' '65' 641' -A4?5' G152-' 2&F' A514':' 5&-51D1'?5?' @A':A' -51E'&2-5F' '&' ?*:A' G 41'4*?' :4&?5M*5&:5?' -4' -A5' E4&21:AC ' -' '?' @A5&' $'5@5F' 614E' -A5' F5D15??5F' D4?'-'4&' 46' A51' 521 C' F2C?(-A2-' -A5' 2:A'5$5E5&-?' 46'A51' 15'G&' ?55E' ?:21:5 C' 5??' -A2&' E'12:* 4*?' 9 A5' E2?:* '&5' G5&'*?' 46' -A5' &G '?A' M*55&' ?-2&F?' 4*-' 15 '5$5F' +5C4&F' '-?

I' ; ' #K$0 ?' # / /' ?G$&D +ℂ' / *# # # ' # ' +' # ' $' / & $ $ # ' ' ? ' - - ' P ' U' 7 ? ' ' + # ' L - & $#+ ' 0 7 ' D G' ' ' #"# ' ' + $ ' ? ' ? # #$ ' L ?$' ' $ >' + $ # '" ' $ G' ?$ ' #"# ' ' $ /' ' >' ? ' ? # L $ >' *' ' 0! & ' ? /' 0 ' #$ ' #"# ' 0 ' ? ' $ ' + / ' # ? ' 0>' J$+# $ # ' #"# ' ' $ /' ' >' ? ' L ' # , # # # ' # ' $ >' +$ ' *' $ ' #"# ' 0 ' ? ' ? &?' *$# ?'$' '"$' ? >' ?$ '- ' *' " $ / V' ' G /' 0 ' /#*L ? ' ? # #$ '*$# ?V' ℂ' *#& ' ' $>' G?#&?'*$ /' G ' #K$0 ?' ' ' ##' - ' F(2' .' # $ ' ' $? #& ' / ' ?#' ' # ' +# / /' *' $ > +' *' $ #

&2-*12 ' F'E5&?'4&? +C '-? ?5D212-'4& 614E -A5 ?46-51 M*2 '-'5? 46 A51 ?5J ℕ @A' 5 A51 1'$2 ℚ?('H5 ?4E5 $2?- +*- ?CE E5-1':2 5F'6':5(4?5? '& 26'D5212&:5 ℚ?4E5@A2- 46 '-? 2:-*2 G12&F5*1.614E -A5 D5165:- A21E4&C 46 '-? D14D41-'4&?

A5 :'1:*E?-2&:5? 46 -A5'1 F52-A?(@A':A @515 ?4E5@A2- ?'E' 21(F'?D 2C5F -A5 G152- F'??'E' 21'-C 46 -A5'1 :A212:-51? 4-A D'&5F 2E'F?- -A5'1 14C2 ?-2-5(2 D15C -4 '&:*12+ 5 F5?D4&F5&:C(12-A51 -A2& 2&C E21H5F +4F' C F'?-5ED51 & 'L2+5-A '- ?D1*&G 614E @4*&F5F $2&'-C(2 ?* 5& :4&$':-'4& -A2- ?A5 A2F 4*- '$5F -A5 2FE'12-'4& 4& @A':A ?A5 A2F ?4 4&G 65F(> 2&F 5$5& -A5 ?4 2:5 46 61'5&F?A'D 2&F -A5 2--2:AE5&- 46 A51 ?*+,5:-? 41 F'F ?A5 ?55H :4&?4 2-'4&(@A515 2 4&5 '- @2? -4 +5 64*&F? '& -A'? ?2F A4*1 ?2+5 2(4& -A5 4-A51 A2&F(?*&H *&F51 2 -44 2:*-5 ?5&?'+' '-C -4 -A5 ?*6651'&G? 46 4-A51? *-(2E'F?- -A5 G44E @A':A G2-A515F 214M&F A51(?A5 44H5F @'-A -A5 5C5 46 62'-A -4 -A5 +1'GA-51 D14?D5:-? @A':A *&64 F5F 46 -A5 6*-*15ℕ 2&F @A5& ?A5 15?'G&5F A51 2?- +152-A('- @2? 2E'F?- -A5 -521? 2&F *&'$51?2 2E5&-2-'4&? 46 A51 D54D 5

- '? '& -A'? *&FC'&G(*&2+2-5F 2--2:AE5&- 46 -A5 &2-'4&('&F55F(-A2- @5 ?55 -A5 E4?- *&5M*'$4:2 -5?-'E4&C -4 -A5 $'1-*5? 46 ?2+5 2 & -A5 F4@&B @21F D14G15?? 46 -A'&G? '& D2'&(?4E5 46 -A5 E4?- ' .2F$'?5F E52?*15? 46 A51 2FE'66'?-12-'4& A2$5 64*&F 62$4*1 2&F +55& D51D5-*2-5F(@A' 5 -A5 E415 ?2 *-21C A2$5 +55& 641G4--5& A'? E2C 52F -4 2 E'?:4&.

:5D-'4& 46 A51 152 E51'-? & 41F51 -4 5?-'E2-5 -A5?5(@5 E*?- '?-5& -4 -A5 $4':5 46 A51 :4&-5ED4B 121'5?(- '5 5C5.@'-&5??5? 46 -A5 :4&F'-'4& '& @A':A ?A5 64*&F -A5 ?-2-5(2&F '& @A':A ?A5 56- '- 5 ?A2 -A5& ?55 +*-'[4&5 ,*FGE5&- 641E5F 46 A51(@A5-A51 +C 6415'G&51? 41 &2-'$5? A5 15&:A 2&F -2 '2& @1'-51? 5M*2 C ,4'& '& :5 5+12-'&G -A5 -1'B *EDA2&- G 41'5? 46 A51 15'G&(2&F A51 E2G&2&'E'-C(@'?F4E(2&F D*1'-C 46 :A212:-51 9 51 4@& ?*+B ,5:-? 5J-4 A51 2? <-A5 E4?- +1' '2&- 5J5ED 21 46 5$51C $'1-*5(K 2&F E4*1& 4$51 -A5 F2C 46 A51 F52-A 2? -A5 2?- 46 -A5 D14?D51'-C 2&F A2DD'&5?? 46 -A5'1 :4*&-1C NK- @A' 5 -A4?5 @A4 A2F &52151 2::5?? -4 A51 D51?4& 215 *&+4*&F5F '& -A5'1 2FE'12-'4& 46 -A4?5 2E'2+ 5 M*2 '-'5? @A4?5 6* D4@51 '? 15$52 5F 4& C '& -A5 *&15?-12'&5F '&-'E2:'5? 46 F4E5?-':'65)

]! ; +" #R $> $ 8# '# - $D# "* *? H- / # , $ #+# +$" # /# - /#&# # -# $# $ / $ #, #? #/#0 & +- -$ $ /$V :# 222 :# - FE@ . 8+&&#$ /# # "# ? $ $ /# # #+# & +# & " $ /# #+ # " # #/# +$" $ #+# $ - / K$R 2 /0 $ #0'#. ? +, - #& ? / $?# ? * G# "& ?#'$L $# R (\$ 2@EB / - # +-?$ " # /$+ , # - #+# $ $#$ / '#D -$ &* $ > $0 / $ # , # $>/$ 0$ $ + $& , >$ + / 8 $/ $ P :

' J 0# $ $ $ J & / & - ?> # , 0 $ '# $ 0# + # & / I $ - # $- / $ + R + / $>$ / ? JJ'#A $ +# &?$- JJ### A $'$- "# * F) A $ $ & X 0 G ?G / * & +- $ >< U ; , #/ + /# + #6# -$ # * #&# $ + / & + # + '# + - &? #+ + - &#+ # - ## #& #0'JJ#.A $ /? P* ?$/ / * ? #+ > * ?# ? G# *# / $0 /$ & & /'0> ?'# / L *$ #"$0 + &# '# ? F2 * ? + / $ $ &$/ / 6# + '#

F) (

A5 , * FG E 5&-4 6 D4?-51'-C A2? 12-'6'5F -A5 ?5&-5&:5 46 A51 4@& 2G5 A5 E 4?- 5& 'GA-5&5F D2&'21F? 46 -A5 D15?5&- F2C(+C &4 E 52&? '&?5&?'+ 5 -4 -A5 51B 141? 46 A51 G4$51& E 5&-(+ * - E 415 :2D2+ 5 4 6 2DD15B :'2-'&G '-? E 51'-? -A2& -A4?5 4 6 2 5?? '&?-1 * :-5F 2G5(+521 A4&4 * 12+ 5 -5?-' E 4&C -4 A51 F5?51-?% 2&F(@A' 5 -A5C D2?? 4$51 -A5 + 42-5F E 2G&'6':5&:5 4 6 ?* : :55F'&G E 4&21:A?(@A4 2115?- -A5 D4D * 21 5C5(F@5 ' @'-A 5&-A * ?'2?E 4& ?2+5 20? :A212:-51(2? -A5 E 4?- -1 * C G152- '& -A5'1 '&5 4 6 D1'&:5? 9

I G /0 $ > &# &$/ +> * 6# > G? # ? $? # > ' $ / ' 23E@ $-- # / ? # $ & L $"$# * &?G # $ $ # $ $ > + &# / #' $ + - $'$ "> ?$'# # ? + ; # $ $ $ / ? G? ?$' $ / G? $# / $ # 0 + L / &? ? ? ? # $L + ? + + > 0 ? -$# # ? - 0 #&$ # # 23F2 * ? '$L > G# 0 **#&# ? G L # / & + & + -# / 0> ' $/' ? +$ DL ?# + * ? # $ # * ? $0 #0 -$#/ $0 $ #" $ $ $ -$ $ ' + * &?$ $& 0> ? > $ -$ # ? ? # '$ $0 + #

;

Z

8 6 8 L

7 6 6 8 6

8

< = > <

$ F52-A 46 ?2+5 2 G'$5? 2 &5@ :4ED 5J'4& -4 4*1 A'?-41C(2 D1'&:'D2 4+,5:- 46 @A':A A2? +55& -A5 ' *?-12-'4& 46 A51 D51?4&2 :A212:-51 2&F D*+ ':2FB E'&'?-12-'4& A5 2--51 D21- 46 -A5 &2112-'$5('- '? -1*5(A2? +55& :A'56 C 4::*D'5F @'-A -A5 6415'G& 15 2B -'4&? 46 D2'&('& @A':A A51 '&-516515&:5 A2? +55& 5?? 4+$'4*? -A2& '& -A5 F4E5?-':\ +*-?-' @5 A2$5 +55& E2F5 :4&?:'4*? 46 A51 D15?5&:5 2&F D215&-2 ?*D51$'B ?'4&(+C -A5 E2'&-5&2&:5 46 41F51(2&F -A5 G5&512 D14?D51'-C 46 -A5 &2-'4& 51 F52-A @' E2H5 *? E415 ?5&?'+ 5 46 -A'? '&6 *5&:5(?'&:5 '- @2? -A5 ?'G&2 641 F'?41F51? @A':A 5$5& -A5 G5&'*? 2&F 2*-A41'-C 46 51F'&2&F @515 *&2+ 5 -4 ?*DD15??

A' 5 -A5 M*55&0? 15E2'&? @515 C5- ?:21:5 C :4 F T'&G 51F'&2&F -44H -A5 *?*2 E52?*15? 641 2&B &4*&:'&G -A5 ?*::5??'4& 5 15?'G&5F -A5 :14@& 46 2?-' 5(@A':A A5 A2F @41& @'-A ?4 E*:A G 41C 641

;

;

-A'1-C C521? 14 E 2 ?:2664 F 12'?5F '& -A5 G152- ?M*215 46 4 5F4(-A5 A512 F? D14: 2'E5F(+C ?4*&F 46 -1*ED5-(-A5 2::5??'4& 46 A' 'D 2&F)42&&2 -4 -A5 2?-' '2& -A14&5(2&F -A5 14C2 ?-2&F21F @2? *&6*1 5F +C -A5 *H5 46 $2('& A4&4*1 46 -A5 ' *?-1'4*? D2'1 A5 T'&G 46 12G4& -A5&D*+ ': C 2??*E5F -A5 -'- 5 46 2FE'&'?-12-41 41 G4$51&41 46 2?-' 5(2? D14$'F5F +C -A5 M*55&0? -5?-2E5&-(2&F 15:5'$5F -A5 4+5'?2&:5 46?*:A 46 -A5 &4+ 5? 2? @515 D15?5&-('& A'? &5@ :2D2B :'-C A5?5 D14:55F'&G? -44H D 2:5 4& -A5 5$5&'&G 46 -A5 ?2E5 F2C 4& @A':A -A5 M*55& 5JD'15F 9

:'1:* 21 @2? &5J- 2FF15??5F -4 -A5 D1'&:'D2 :'-'5?(15M*'1'&G -A5E(26-51 -A5 :*?-4E21C :5 5+12B -'4& 46 -A5 4+?5M*'5? 46 -A5'1 2-5 ?4$515'G&(-4 12'?5 -A5 14C2 +2&&51? '& -A5 &2E5 46)42&&2 2&F @1'-? @515 'EE5F'2-5 C '??*5F '& A51 &2E5(@'-A4*- E5&B -'4& 46 A' 'D0?(641 -A5 :4&$4:2-'4& 46 2 :41-5? -4 12-'6C -A5?5 D14:55F'&G? 6

A5 2??5E+C E5- 2- 414( )2&*21C <<-A(<

A5 M*55&0? @' (41 12-A51 ?*:A :2*?5? 46 '- 2? 15 2-5F -4 -A5 ?*::5??'4&(@515 152F 2 4*F(2&F 15B :5'$5F -A5 5&-'15 2DD14+2-'4& 46 -A5 :4EE4&?(@A4

1 '$ 8 + &# 0 $/+# $ # " +# & $ + 8 H# + ## * A , $ " / 0 # *# #V $ > - -# -&& JJ#J 0# - $ A 8$ #0$> + ## #0 JJ &$- ?# #-0 $+ G$ + # / # A 8$ # / K / $ 0$!$ $ 0 # "' $ * #" # ? $? /?$' $D ? & +L 2@E(A $ / '$ 6# / $: + # - 5 $ > $?' - & ? $G *' $-# # $ ## V $> 21B ? $ # $ /' - &#$ >' & L > # $ # ? - + - * **#& 0 $ #' $ L - & /# " , + + ^ 0 # #$ 9 # $ $ + ' ' #0 $ # $/ & #0 < $ ## + '$+ : &$- JJJ#'

-4G5-A51 @'-A -A5 G12&F55? 2&F D15 2-5? D15?5&-(-44H -A5 42-A? 46 2 5G'2&:5 -4)42&&2 2? M*55& 2&F 2FC D14D1'5-41(2&F -4 A' 'D 2? A51 A*?+2&F A5C -A5& F5-51E'&5F -A2- -A5 5J'G5&:C :4&-5ED 2-5F '& -A5 -5?-2E5&-(46)42&&2? '&:2D2:'-C(2:-*2 C 5J'?-5F(9 2&F D14:55F5F -4 -5&F51 -A5'1 A4E2G5 -4 T'&G 51 F'&2&F(2? -A5 2@6* G4$51&41 46 -A5 152 E '& A51 &2E5 A5 2--51 '& -*1& E2F5 -A5 :*?-4E21C 42-A -4 15?D5:- -A5 2@? 2&F '+51-'5? 46 -A5 H'&GF4E 2&F -A5 @A4 5 @2? -51E'&2-5F +C 2& 5E+2??C 614E -A5 :41-5?(@'-A 2 @1'--5& 2::4*&- 46 '-? D14:55F'&G?(-4 -A5'1 &5@ ?4$515'G&? '& 2&F51?"7"

?55E5F &4@ F4&5 -A2- @2? F5E2&F5F 641 G'$ '&G 2 :4&?-'-*-'4&2 ?2&:-'4& -4 51F'&2&F0? 2*-A41'-C 2? 15G5&- C -A5 @1'--5& 2@ 46 -A5 2&F(-A5 ?4 $515'G& @2? 5ED4@515F -4 &4E'&2-5 2 15G5&:C '& :2?5 46 -A5 E'&41'-C 41 '&:2D2:'-C 46 -A5 A5'1.2DD2 15&-7 A'? A2F +55& F4&5 '& -A5 D15?5&- '&?-2&:5 +C ?2+5 2(2&F 2- -A5 521&5?- ?4 ':'-2-'4& 46 :41-5?(E2F5 -@4 C521? D15$'4*? -4 A51 F52-A - A2F 15 :5'$5F -A5 :41F'2 2DD14+2-'4& 46 -A2- +4FC(@A':A A2F *&F5&'2+ 5 2*-A41'-C -4 :4&-14 ?*:A -5?-2125&-.

1 ? +$ $ / $ / / #&$&>G?#&? ?$/ / $L 0 $ $ / ? /$ "? (# *# +# > > # ' > " $ + $ G +$ D / 0> & ? & -> * ? #L "# $ $& # 9 # $ + '# #0 '# & #' X 0$ &$ > / $" + ## HHH &$- J' &'## A 9 # $ $ + '# #0 '# &'### A $ # $ #$ / $ ## # &$-'#' A $ #$ $ + ## #0 JJ'### &'J# A $ L / '$ 6# / $:' + #' -5 .' # $ #/$ '## # 'J' > ### 1 8 #&&#$ /# #' G# ? ? #" L $ & * ? -$ # ?& # # $ $ "? # $ * #" /# - ? , (#"? +$D $ > &? + = /($ #0 '##

S

21C D14$'?'4&? 9 A*?(614E -A5 6'1?- -4 -A5 2?- ?-2G5 46 -A5 D14:55F'&G(-A5 @A4 5 A2F G4&5 4& @'-A ?:1*D* 4*? 2--5&-'4& -4 :4&?-'-*-'4&2 641E ?N C5- -A5 2*-A41'-C 46 -A5 &5@ 15G5&- @2? 621 614E +5'&G 6'1E C?52-5F(2&F '- @2? -A5 :4&$':-'4& 46 -A'? @A':A A2F 5F A'E -4 2::5 512-5 E52?*15?

2&C 46 -A5 &4+ 5? @515 5J-15E5 C F'??2-'?6'5F @'-A -A5 M*55&0? ?5-- 5E5&- 46 -A5 15G5&:C(@A':A A2F -2H5& 2'1 +56415 A51 F52-AN 2&F -A5C A2F 5$5& G4&5 ?4 621 2? -4 ?5&F -4 2&F51? +56415 -A2- 5$5&-(2&F '&$'-5 A' 'D -4 2??*E5 -A5 G4$51&E5&- A'E?5 6N 2? -A5 &2-*12 G*21F'2& 46 A'? @'65 6 A5?5 F'?:4&B -5&-5F 41F?('6 -A5C F'F &4- 156*?5 -4 ,4'&' '& -A5 D*+B ':' 2:-? 46 2:H&4@ 5FGE5&- -4 51F'&2&F 2- 414(2- 52?- @515 &4- 15?51$5F '& '&-'E2-'&G -A5'1 F'??2B -'?62:-'4& %N E4&G -A5 E4?- D14E'&5&- @515 -A5 21M*'? F5 ' 5&2(@A4 E2C +5 ?2'F -4 A2$5 +55& &*1?5F -4 62:-'4& 614E -A5 :12F 5(2&F -A5 *H5 F5 2,212(+4-A D4-5&- &4+ 5?(@A4?5 +142F F4E2'&? A2F +55& G1'5$4*? C : 'DD5F +C -A5 15?*ED-'4& 46 -A5 :14@& 2&F? ?4 ?:1*D* 4*? C 5&641:5F +C -A5 2-5 G4B $51&E5&-(2&F @A4 44H5F 641@21F -4 -A5'1 ?D55FC 15:4$51C *&F51 -A5 :215 5?? 1* 5 46 2 C4*&G('&5JD5B 1'5&:5F D1'&:5 'H5 A' 'D i

I ? G? 0! & * ? - G *& #? -$ L #& $ $ /#& /' >* > $ /' $#*$& #> 0> $#$ $ #$ ## &$- J### X +$ / K 6# / > $ &$- &&### A +&$ + ## > JJJ !&$- H: &'### 1A $ > - -# - && JJ#' && JJ'## 9 #$ $ # ?$ $?- 0## > - /#/? +$" /#& $ /' + '#' &$- ### . G /' + 0 & $/#& /' 0> $ 0 , -$ $" * &$- : a $0 $# '? G# -$ #& L $ > ! # ? && ' $# $? & G $ / & ' /* + ?

*-' -A5' E4?-' 56':'5&-'46'A'?' D21-'?2&?' @2?' 4&')*2&' 2&*5(' 51F'&2&F0?' 2E+2??2F41'2-' -A5' :4*1-'46' 2J'E' '2&' A'?' &4+ 5E2&(' F5?:5&F5F'614E' 4&5'46'-A5' E4?-' ' *?-1'4*?' A4*?5?' '&' 2?-' 5(' @2?' 2' D51?4&'46'*&:4E E4&' D21-?M' 15?- 5??' 2&F' '&-1'G*'&G(' D 2*?'+ 5' '&' A'?' 2FF15??(' +4 F' '&' A'?' D 2&?(' +*-' 5J:55F'&G C':2*B -'4*?(' 2&F' 5$5&' :*&&'&G(' '&' -A5' 5J5:*-'4&' 46' -A5E ' 5' A2F'641E51 C' '&?'&*2-5F' A'E?5 6' '&-4' A' 'D0?' :4&B 6'F5&:5' F*1'&G' A'?' $'?'-' -4' D2'&(' 2&F(' 4&' 15:5'$'&G' &5@?' 46'-A5' M*55&0?' F52-A(' A2?-5&5F' @'-A4*-' F5 2C' -4' ,4'&' A'E' '&' -A5' 5-A51 2&F?

A14*GA' A'?' E52&?(' 2&' 5J-5&?'$5' :4115?D4&F5&:5' @2?' ?44&' 4D5&5F' @'-A' -A5' F'?:4&-5&-5F' 2?-' '2&' 41F?(' 2&F' A' 'D' @2?' D51?*2F5F(' &4-'4& C' -4' 2??51-' A'?' D15-5&?'4&?' -4' *&F'$'F5F' ?*D15E2:C' '&' 2?-' 5(' +*-' -4' ?5&F' 2' 5--51' -4' A'?' 14C2' 62-A51.'&. 2@(' 15B M*'1'&G' A'E' -4' 15?'G&' -A5' G4$51&E5&-'2-' 4&:5(' 2&F' 15-'15' '&-4' 12G4& 9' A5' F5E2&F' @2?' -152-5F' @'-A

$, # $ ' *' :# $' A' L * ' ? 'G# 'G$ '- / & /'0 * ' + ' # & ':$ # ' / '6# ' & '0>' ?' >$' & $ >'# ' -'442 ?' # '#++ /#$ >'* GL I' U' 'G$ '#' **#&# V' # "' ?', C'/ $?<' $ /'9 =' $> ' 0 '#'$ # ' #$'?$'- ' /' ?'$// ' *' ' ? #-0'- # ' ' ?'" L ?$'0 />'& ++ # "' ' ?' ' + 'R' ' -- ' ' ? ' -$' *'# '& ' $ # "' ' ! ' #"? '$ /' ' ?'# &# $L ?' &&# ' $ ' +''#' # ' *'?'- - ' *' $ # ' ?' &$-'#' .' ' $ 0$!$ '$' + +L $? #>' *'$ $+ ' '; R 0' *' ?' >$' & #+&# 0 $ /') ((' '" '" (' ' '(G?' G$' - ' $' ?' JL)) & $ /' # ' & ' ' - >' / & $ '$' ?'$-- '$' ?#+'$-- $ /'& $# >' '0'# L *' ?' $+ 'U'$'& > ' =' #, # R' 6# ' *' ?$ ':' "$+# *'>' $ ' / $&# ' + ' ' '##' -') .' 'G? ' ' '# L ?$ BV'?$' $ & #0 /' ?'G? ' #+$ /'$'/ 0' *'# ' " # L *' ?'M/ & + '#' ?#' $ ' '0 * ' ' 0 _' L G# ?' ?' #" $ ' *' ?' L $# >' ' '#'# '"'$' ?$' #+ $ >'$ /' ?' ' '/# # " # ? /

?4E5 :4&'5ED-"U +C 51F'&2&F(@A4 2FE4&'?A5F A'E 46 A'? '&:412D5-5&:C -4 G4$51&' 2 &2-'4&' 'H5 -A5 D2&'21F?(@A4E A5 *&F51?-44F ?4 '-- 5(+*-' *1G5F T'E 2- -A5 ?2E5 -'E5 -4 D15?5&-' A'E?5 6 +56415 -A5E @'-A A'? @'65(2? ?44&' 2? D4??'+ 5 9

51F'&2&F0? ?'-*2-'4&(A4@5$51(@2? 621 614E :4EB 641-2+ 5 A' 'D0?(41 12-A51 2&*5 0? 5E'??21'5? @515 +*?' C ?-'11'&G *D -A5 5E+51? 46 F'?2665:-'4& A5C F@5 -4& -A5 2F$2&-2G5? -4 +5 G2'&5F 614E -A5 6155 2&F 2$'?A F'?D4?'-'4& 46 A' 'D(@A':A -A5C :4&B -12?-5F @'-A -A5 D21?'E4&'4*? -5ED51 46 -A5 ?-51& & @A4 A2F ?4 4&G A5 F -A5E *&F51 A'? C4H5 - 51F'&2&F(@A4?5 D4 ':C A2F +55& -4 :1*?A -A5 4$51G14@& D4@51 46 -A5 &4+'A-C(2&F @A4(2? 2 6415'G&51(A2F &4&5 46 -A5 &2-*12 : 2'E? -4 4C2 -C 5&,4C5F +C A'? 2-5 M*55&(@2? 5J-15E5 C 4F'4*? -4 -A2- ,52 4*? 2&F A2*GA-C +4FC A5 &*E+51 46 A' 'D0? 2FA515&-? '&:152?5F '& '- 5$51C F2C(2&F ?44& :4ED15A5&F5F -A5 E4?- :4&?'F512+ 5 &2E5? '& -A5 H'&GF4E

- G? G# /# JL & # + ? $# $?# # " $-? *' $" ?$ - 0# ? /' ? '# + G# ? ? $+ +# ?# 0 # & :$ # C U * +' $ L ? #& '# '?# - # V A U &# $ $ #&$ + +# - / V 7? ? #"# $# G 0 * / G? ? '# '0 '# J# & '?$' D G /" ? & /#&# $ G ?$' G# ? ? , C #" $ # J $ '# ? >$ #0 $ > $ $/ #/

I $ > - -# - && JJJ## A9 #$ $ / $" + '#' #0''#'&'#'A ' B + &# 0'8 H#+ '* @4 A $#$ $'6# '/ -$?$' + '##' #0'JJ'###'&'J##

U J# #+$ V $> '8# '# ! 0 * # #+ '! ' " '$#, $ #0 ##$'$, #- & #*#'U#- +' - #$ * #- , M 0$ '-$ + #0 $#' $# 0$ ' (R <' :# :# - F))

A5 H'&G(@A4 @2-:A5F -A5?5 ?CED-4E?46 F'?B 2665:-'4& @'-A F55D 2&J'5-C(?2'F '-- 5(?2C? 21-C1M +*-:44 C?:1*-'&'L5F-A5 E'&F?46-A4?5 214*&F A'E(F'??5E+ '&G 2? 621 2? D4??'+ 5 A'? 4@& ?5&-'E5&-?9 5 15:5'$5F 6*1-A51 2&F E415 *&5M*'$4:2 5$'F5&:5(2- -A'? -'E5(46-A5 2 '5&2-'4& 46 A'? ?4&.'&. 2@ & 12G4&5?5 G5&-5E2& &2E5F 4&:A' 4?(@A4E A5 A2F D 2:5F &521 -A5 D51?4& 46A'? F2*GA-51(4+-2'&5F 2 5--51 614E A51('& @A':A ?A5 2DD14$5F '& -A5 6* 5?- E2&&51 46 A51 62-A510? 15-2'&'&G -A5 2FE'&'?-12-'4& 46-A5 H'&GF4E A5 5--51 @2? +5-12C5F -4 A' 'DM -A5 *&641-*&2-5 ?5:15-21C @2? ?5'L5F 2&F -A14@& '&-4 2 F*&G54&(2&F)42&&2 @2? D 2:5F *&F51 2 1'G414*? :4&6'&5E5&-(@A':A E*:A 2GG12$2-5F A51 E2 2FC U

'-A -A'? 26614&-(-A5 H'&G 15:5'$5F 2?4 -A5 2 21E'&G '&-5 'G5&:5 -A2- -A5 ED5141 2J'E' '2& 2&F A'? ?4& A' 'D @515 -2ED51'&G @'-A -A5 6'F5 '-C 46-A5 152- 2D-2'&M 5&F52$4*1'&G -4?5:*15 2D 5? '& I2&C 5$5&- -4 -A5 21:AF*H5(@A4 :2'E5F '- 2? -A5 2DD*1-5&2&:5 46 2?-'5(+C @A4?5 21E'5? '-? :4&B M*5?-('& 62:-(A2F +55& 2:A'5$5F A515 @515 &4- @2&-'&G D51?4&? 46 A'GA ?-2&F'&G 2- 51F'&2&F0? :4*1-(-4 '&6*?5 ?*?D':'4&?(A4@5$51 *&@2112&-2+ 5('&-4 -A5 14C2 E'&F(46-A5 4C2 -C 46 A'? $':514C(2

1 U J , **#& , ' $ && >' + '#' #0'#' &' $, / # '#/# #+ J'### A $ > - -# $ $ #+ + #+ $&# -'&& JJJ'#ZZZ9 #$' +'# & $ R -'&& JJJ#J #0'#'&''###'A ; # & $" $ ' $ '2', #&'4' /#$'5 A1 0$ &$' +'##' >'JJJ' '# /'?$/' ?' >'* +' = &$-'H:' #''A $ K$'6# &?# C'0 ?

2?-' '2& +C ++0-A(2&F @A4 4@5F A'? 5 5$2-'4& 5J
: *?'$5 C -4 -A5 M*55& 9

A5 H'&G @2? ?-' 6*1-A51 2&&4C5F +C 15D41-? 46
-A5 '&-'E2-5 15 2-'4&? ?*+?'?-'&G +5-@55& A'? 4 F
5&5EC 4*'? Z 2&F A' 'D(@A4?5 :A' F15& @515
266'2&:5F -4 52:A 4-A51 A5 15&:A E4&21:A('-
@2? ?2'F(@2? D15D215F -4 ?*DD41- A'? 2 C '& 2& '&
$2?'4& 46 2?-' 5(641 -A5 15:4$51C 46 A'? 1'GA-?(+C 2
F'$51?'4& '& A'? 62$4*1 4& -A5 ?'F5 46 4*??' 4&(2?
@5 2? 46 2D 5?.,.

A5 2-A4 ':H'&G 65 - A'E?5 6?415 C D51D 5J5F +C
-A5?5 E* -'D '5F 5E+2112??E5&-? *1'&G -A5 +1'56
D51'4F 46 A'? 15G5&:C(A5 A2F 5&F52$4*15F -4 15:4E
E5&F A'E?5 6-4 -A5 D54D 5 +C 2 ?-1':- 2&F 'ED21-'2
2FE'&'?-12-'4& 46-A5 2@?(2&F -A5 E2'&-5&2&:5 46
D*+ ':41F51 A5 D54D 5('&F55F(2DD15:'2-5F -A5
$2 *5 46 2 G4$51&E5&- *&F51 @A':A -A5C A2F +55&
D14-5:-5F 614E -A5 4DD15??'4&? 46 -A5 21'?-4:12:C
E415 5665:-*2 C -A2& 2- 2&C 641E51 D51'4F A5C
A2F -5?-'6'5F -A5'1 G44F @' +C -A5 2 2:1'-C @'-A
@A':A -A5C :4&6'1E5F ?2+5 20? -5?-2E5&-21C F'?
D4?'-'4&? 2- 414% +*- 2 -A'? ?51$5F 4& C -4
?A21D5& -A5? 2$51?'4& 46 -A5? &4+ 5? 4E5 46 51F'
&2&F0? :4*&?5 41? @4* F A2$5 D51?*2F5F A'E -4
:211C E52?*15? @'-A 2 A'GA51 A2&F A5C *1G5F
A'E -4 15.2??*E5 -A5 -'- 5 46 T'&G 46 2?-' 5(@A':A
A5 A2F ?4 4&G D4??5??5F 2? A*?+2&F 46 -A5 2-5

P '## :# **# :# $ &$ + ## JJJ &$- J'
--F) AF)A 9 # $ $ &### ÑN $ > - -# -
+'#' #0''#'&''J#'A $ $ &&J& A $&& # #$ #- 5(
:# $/# $: * F@ AM 0=

M*55&N9 2&F 4-A51? 5$5& 2F$'?5F A'E -4 2??5E+5 2& 21E5F641:5(@A':A ?A4* F 4$512@5 2 4DD4?'-'4& -4 A'? 2*-A41'-C 2- A4E5(2&F ?5:*15 -A5 :4*&-1C 614E '&$2?'4& 5 A2F 62:' '-'5? 641 -A'? '& -A5 F'?B +2&F5F 5$'5? 2-5 C 15-*1&5F 614E -2 C(2? @5 2? 2 :4&?'F512+ 5 +4FC F12@& 614E A'? &2-'$5 F4E'&'4&? 46 12G4&(@2'-'&G A'? 41F51? 4& -A5 614&-'51 6 *:A $'4 5&- E52?*15?(A4@5$51(@515 15D*G&2&- -4 A'? A2+'-*2 D4 ':C(-5ED512-5 2&F :2*-'4*? 5 ?A1*&H 614E 2 :4&-5?- '& @A':A 5$5& ?*::5?? E*?- +1'&G *&?D52H2+ 5 :2 2E'-'5? 4& -A5 :4*&-1C2&F '6 A5 5$51 ?51'4*? C 5&-51-2'&5F ?*:A $'5@?(g A5 2+2&F4&5F -A5E(2&F 5ED 4C5F A'? 5$'5? 4& 2&4-A51 F5?-'&2B -'4&'& 61':2XX '? ?'-*2-'4&(A4@5$51(G15@'5$51C

1 ? '#& =&?$ & / $ 0 #$ - -$ /$ $0 $ $" + # -- *' /# $ /C'- # ? "$'$? #>'$ /' # $? 0$ /' *' ?' $, ?$ $' ? 'G* '" $ /#$' $ /' $/L +# # $ *'?#'/$ "? 9 #$' $ + '#'&$-'J#' X 9 #$' $ + '#' #0' '#'&$-':'H:'A' $ K$' 6# + '#' #0'#'&$-'J'### $ > - -# -' &&J&# a 0 - $D'G# ?'& L *#/ &' *' /# $ /C'# # U' -- ?#-C' $ /# "' 0>' * &' *' $ + V ?$:'' ## -'24.'$'#+- $# 'G?#&?' ?$'0 "?'$?$'>'! /"+ ?'?'?# #$ C'? $/'* +'?' & ' '$? *' ?'6# >' *' -$# $0# >& -$ & #$. U' ?# V $>' ?' $ R'#' $'$'#$ &'G# ?' 0 ?' ?'$ /' - 0$0# # >< / $' ?' >'$? # >'&# /'* ' ?#' ! / & $+$ # $** /' ?' #"? '" /'* '# V : '## h'F3B . ' ? ?#' #' $ /' 0>' $ + '###' -'F3F .'G? '#' -- /' 0>' $##$ $' + '##' #0' JJ'### i'J'#.' $ /'#' ?' + L , #' &$' +$ 0>' 9 #$' +'#' #0'#' &$-'JJ#.' $' + &?' ?#"? ' $? #>' ?$' #? ' $ > '#'#' 'G? +' ?$+'/ '$-- $' ?$' '& /' ?#' &&$ # / & $?$' ?' D# '" ?$/' / #" '* & -# '&&J&#'&&&' +$ / K' &$-'&&##' A' $ 0$!$' $ ' $ 2@E@

A4*1 E415 :1'-':2 21E5F +C 1*E4*1? 46 4*'?0?
E' '-21C D15D212-'4&?(641 @A':A '+512 ?*DD '5? @515
$4-5F +C -A5 ?-2-5?.G5&512 -15E+ '&G 641 -A5 62-5 46
A'? -2 '2& D4??5??'4&?(F5?51-5F 2&F +5-12C5F +C -A5
G152- &4+' '-C 2- A4E5(-A515 ?55E5F &4@ &4 2B
-51&2-'$5 56-(+*- -4 E2'&-2'& A'? G14*&F +C 641:5(
41 15?'G& '- 2- 4&:5(2? 15M*'15F +C A' 'D(2&F 15-'15
'&-4 12G4& A'? 2?- :4*1?5 2DD521? &5$51 -4 A2$5
+55& :4&-5ED 2-5F +C A'E 5 15?4 $5F 2- 2 A2B
L21F? -4 H55D -A5 15'&? '& A'? 4@& G12?D('&6 *5&:5F
'& D21-(D14+2+ C(+C -A5 :4&?:'4*?&5?? 46 A'? 1'GA-?U
2? @5 2? +C 2 ?5&?5 46 F*-C(@A':A 641+2F5 A'E -4
15?'G& -A5 -1*?- A5 A2F $4 *&-21' C 2??*E5F '&-4
?*:A '&:4ED5-5&- A2&F? 2? -A4?5 46 A' 'D 2&F A'?
:4*&?5 41?N 2&F D21- C(&4 F4*+-(+C &2-*12 15 *:-B
2&:5 -4 15 '&M*'?A -A5 2*-A41'-C @A':A A5 A2F 5&B
,4C5F 641 ?4 E2&C C521? 4 H55D '-(A5 A2F 15B
:4*1?5 -4 2& 5JD5F'5&-(?*:A 2? &5'-A51 61'5&F &41
645 :4* F A2$5 2&-':'D2-5F

5 ?2@ -A5 4& C :A2&:5 46 E2'&-2'&'&G A'? D15?5&-
D4?'-'4& 2C '& F5-2:A'&G 12&:5 614E -A5 '&-515?-? 46
A' 'D(2&F ?5:*1'&G A51 -4 A'E?5 6 A5 G152- 4+B
?-2: 5 -4 -A'? @2? -A5'1 :4&6 ':-'&G : 2'E? 4& 2D 5?
A'? A5 D*1D4?5F -4 4+$'2-5 +C D14D4?2 ? 46 E211'2G5
-4 ?4E5 E5E+51 46 -A5 14C2 62E' C('& @A4?5 62$4*1
-A5?5 : 2'E?(@'-A -A5 :4&?5&- 46 T'&G 4*'?(E'GA-
+5 15?'G&5F 5 2::41F'&G C F5?D2-:A5F 2 :4&6'B
F5&-'2 5&$4C D1'$2-5 C '&-4 12&:5(@'-A 2ED 5 '&B
?-1*:-'4&? 641 2112&G'&G -A5 D15 'E'&21'5? A'?
D51?4& @2?)*2& F5 &G*512(2 2-2 2& E4&H 46

6 8 ;S

E*:A 15D*-5 641 A'? 521&'&G(2&F 2 E5E+51 46-A5 14C2 :4*&:' 9

4*'? Z A2F $'5@5F @'-A E*:A ?2-'?62:-'4& -A5 G14@'&G E'?*&F51?-2&F'&G +5-@'J- A' 'D 2&F A'? 62-A51.'&. 2@(2&F A2F :*&&'&G C *?5F A'? '&6 *5&:5 4$51 -A5 C4*&G D1'&:5 -4 64E5&- '- 5 65 - -A5 F55D5?- F'?M*'5-*F5 2- -A5 D14?D5:- 46 -A5 5&41E4*? '&A51'-2&:5 @A':A @2? -4 F5$4 $5 4& -A5 2--51(:4EB D15A5&F'&G *1G*&FC 2&F 2&F51?(*?-1'2(2&F D14+2+ C -A5 5ED'15(-4G5-A51 @'-A -A5 *&'-5F :14@&? 46 D2'& 2&F -A5'1 1':A F5D5&F5&:'5? C -A5 D14.

I * ' # '' ?#
-# G$ & > - /
?$ /# $ / ?$/ ** /' ?#
?$ / ? "? && * >
P $ $ $!$ $0 $
* $ & +- # * ? '
& G * $ # G? # L
'#' /# "$ 9 # $ +
'# #0 '# &$- J#' A $ #$ $
+ ## #0 JJ' ### & J### A
$. ? - #"# $ /
/ 0 # ? * +$ #& * ? ?
$ # #$ 0 G? G# ? /# ?
?# G$> /# & /# ? D# ''
+ G# ? ? - - &#' / - ?$- + / " *& /# * +$ # > > # &# & $ # * $ $+ 6 > : ?$'# '' $ > & , # /# $ /(- # $- ' G# '' P $ $ 0 ?# "# L #+$ /$ "? 0$L !$ $ $*# 2( ) (. ? > $? # > * ?# $ + 0 ?$ "#' $ # L &$ # & / & ? *# > G?#&? ?$ 0 "? ?$+(# * $#' + G?$ + &#* > ?# ? / $"$# < > ?# $ > *$# ? # ? +$ +$> *# / + -$ #$L # $ $ $ **#&# & ?#+' * +' ? &?$ " *' G# * +# = $ + # ? *$& ?$ + &# $ $ #' ?# #$ $ / $ + -$ # $ / *$# # L , # $* ? ?$ & + ? ? $+ & & # + / $ $ &$/ / 6# ' + '#' J#J . ? G # > ? ? $? # > *' $ / '$ $?# #$ *' ? $?$ * *' ? #J ? & > G? $D / $ # &$ 0 - L +# / & 0$$ & ? '' #+ > $** / /0> ? # & *& +- $ # $ / ? " $ /# & /# *' && /# '' G # 6# / $: + #' - J . # + /# & G# ? ## *# ** *Q# '' /# $ / +$D ?#+' $* G$ / - - * $ /$ "? *Q# '' +$ # ? G / ?# G '' $ /L /$ "? 6# / $ $# + H : &?$- JJJ

D4?5F' E 211'2G5(' 2' F'?E 5 E +51E 5&-' E 'GA-' +5' E 2F5' 2-' 52?-' 46' -A5' D2&'?A' E 4&21:AC\' 2&F' U 5 ' H'&GF4E?' 46' 2?-' 5' 2&F' 12G4&(' D2??'&G' *&F51' F'66515&-' ?:5DB -15?(' E 'GA-' ?51$5(' 2?' -A5C' A2F' 641E 51 C' F4&5(' -4' &5*B -12 'L5' 52:A' 4-A51 ' -' @2?' -1*5(' -A'?' @4* F' '&$4 $5' 2' 1*D-*15' @'-A' A' 'D(' -4' @A4?5' ?4&' A'?' 4@&' F2*GAB -51' @2?' D14E '?5F' '&' E211'2G5 ' *-' -A'?' E 2-:A(' 5JB -15E 5 C' F'?-2?-56* ' -4' A'?' ?*+,5:-?(' G12F*2 C' +5:2E 5' ?4' -4' 4*'?(' 2?' 5$51C' @2C' D15,*F':'2 ' -4' -A5' '&-515?-?' 46' 12&:5 9

'-A4*-' E *:A' F5 2C(' -A5156415(' D15 'E '&21'5?' @515' 2112&G5F' @'-A' -A5' 12G4&5?5' 5&$4C(' 2&F' 'E E5F'2-5 C' 26-51(' '&' -A5' E 4&-A' 46' *G*?-' < (' -A5' 4*&-' F5' '6*5&-5?(' 2&F' A4E 2?' 2 651'-(' 15G5&-' 46' -A5' 14C2 ' :A2&:51C(' @515' D*+ ':' C' ?5&-' 2?' D 5&'D4-5&-'21'5?' 4&' -A5' D21-' 46' T '&G' 51F'&2&F(' -4' :4&: *F5' 2&F' 5J5:*-5' -A5' -152-C

-' @2?' 2G155F(' 2?' -A5' +2?'?' 46' -A5' 2 '2&:5(' -A2-' -A5' 2-A4 ':' H'&G' ?A4* F' +5' E211'5F' -4' 51E 2'&5(' F2*GAB -51' 46')52&' F5' 4'J(' '?:4*&-' 46' 21+4&&5(' 2&F' 46' 4&5' 46' -A5' ?'?-51?' 46' 4*'?' Z (' 2&F' G12&F.F2*GA-51' -4' 54&412(' b*55&' 46' 2$2115(> -A2-' G*' -C' ?'?-51' 46' H'&G' 51F'&2&F(' @A4?5' 62-5' '?' 15:41F5F' '&' -A5' 521B '51' D21-' 46' 4'*9 A'?-41C ' A5' 1'&:5??' 51E 2'&5(' '-' @' ' +5' ?55&(' -A5156415(' @2?' &521 C' 15 2-5F' -4' +4-A' -A5' :4&-12:-'&G' D21-'5?' A5' @2?' 2-' -A'?' -'E 5' 5'GA-55&' C521?' 46' 2G5' 2&F' $51C' +52*-'6* -' A5' A2F' +55&

1' / ' $ " ' &?$- + ' : ' #0 ' HHH : ' ' '# ' '#' ' A ' H: ' A ' $ / ' > ' 6# ' / ' ' ' 8 + &# ' * ' @B ' A ' $ $L # ' H ' - - ' FF4 A FF5 ' K$ ' / ' / K$ ' $, ' / ' *' ' P6# ' / ' $'$ -$ $' + # ' - ' (2E U' $,

5F*:2-5F '& -A5 D2 2:5 46 A51 14C2 *&: 5(@A515 ?A5 A2F 'E+'+5F -A5 6155 2&F $4 2-' 5 E2&&51? 46 A'? G2C(*J*1'4*?:4*1- 4 -A'? 2FC 4*'? Z :4&?5&-5F -4 15?'G& A'? : 2'E? 4& 2D 5?(-4 +5 ?5:*15F +C @2C 46 F4@1C -4 A51 2&F A51 A5'1?(E2 5 41 65E2 5('& D51D5B -*'-C & :2?5 46 A51 F5:52?5 @'-A4*-'??*5(-A5 E4'B 5-C 46 -A5 H'&GF4E 15:4G&'?5F 2? A'? +C -A5 D21-'-'4& -152-C @'-A D2'& @2? -4 15$51-'-4 A'E -'@2?6*1-A51 2G155F -A2-' 51F'&2&F ?A4* F 15'E+*1?5 4*'? Z 641 -A5 5JD5&?5? 46 -A5 52D4 '-2& @21(+C -A5 D2CB E5&-' 46 <((G4 F F*:2-?('& -5& C521 C '&?-2 B E5&-?N 2&F(2?- C(-A2-' 2':4ED 5-5 2E&5?-C ?A4* F +5 G12&-5F +C A'E -4 -A5 41F? 46 -A5 &G5$'&(41 15&:A D21-C '& 2D 5?(@A4 ?A4* F 15:5'$5 6* 15?-'-*-'4& 46 -A5 '1 :4&6'?:2-5F A4&4*1? 2&F 5?-2-5? E*-*2 -152-C 46 2 '2&:5 2&F :4EE51:5 @2? -4 ?*+?'?-' A5&:5B 641-A +5-@55& 12&:5 2&F D2'&N 2&U jA5 -@4 EF&.' 21:A?(A4 F'&G 4&5 2&4-A51(-4 M*4-5"^A5 @41F? 46 -A5 '&?-1*E5&-(R 2? -@4 ?4* ? '& 4&5 2&F -A5 ?2E5 +4FC(K D 5FG5F -A5E?5 $5? -4 -A5 E2'&-5&2&:5 2&F F565&:5 46 -A5'1 15?D5:-'$5 1'GA-? 2&F H'&GF4E? 2G2'&?-' 5$51C 4-A51 D4@51 @A2-5$51 A'? -152-C @2? ?'G&5F +C -A5 15&:A H'&G 2- 4'?(:-4+51 <;-A(< (2&F 12-'6'5F +C 51F'&2&F -A5 2-A4 ':(2- 5G4$'2(4& -A5 < -A 46 -A5 ?2E5 E4&-A 9

R $, V $> $ " ' " ' ' ? /# & -$ &> *$" G? ?$/ / 0 * ? 0 G ? -$ # ' > G - # & U B $# 0 * 0> +$D# '" /# $ /C $?# 0 - # & / + # #+ > ?# >= ' > $ % C$' # - # - / +0 L 6# / # H + #' - - # V M+ # &?$- J#J . (@)
G /0 $ " #* ? ?$/ I + - #- +$ $? $" * #"? :$ # $ + #' (E R--)FA)(

:A @515 -A5 F'?G12:56 2&F E4?- 'ED4 '-':
-51E? 46 -A'? :4ED2:-(+C @A':A 51F'&2&F('& 41F51
-4 ?5:*15 -A5 +1'56 D4??5??'4& 46 2 +2115& 2*-A41'-C(
2&F D51A2D? -4 G12-'6C U4E5 *&@41-AC 655 '&G? 46
15$5&G5(@2? :4&-5&- -4 +21-51 2@2C 2 -A4?5 ?4 'F
2F$2&-2G5?(6 4@'&G 614E -A5 *&'4& 46 -A5 D2&'?A
E4&21:A'5?(@A':A A2F +55& -A5 G152- 2&F @'?5 4+B
,5:- 46 A'? 4@& 2&F ?2+5 20? D4 ':C P 41('& -A5
5$5&- 46 E2 5 '??*5(> 2&F -A2- A5 ?A4* F A2$5 '??*5
@2? +C &4 E52&? 'ED14+2+ 5(:4&?'F51'&G A5 @2?
&4- C5- 6'6-C.64*1 C521? 46 2G5(> 12G4& 2&F '-? F5B
D5&F5&:'5? E*?- +5 -4-2 C ?5$515F 614E 2?-' 5 9
& -A5 4-A51 2 -51&2-'$5(-A5 ?D 5&F'F -2 '2& :4&B
M*5?-?(@A':A 26-51 ?*:A :4?- 46 -4' 2&F -152?*15 A5
A2F 6'&2 C ?5:*15F -4 A'E?5 6(E*?- +5 ?A215F @'-A
A'? *&?*::5??6*:4ED5-'-41 & 2&C 5$5&-(A5 A2F
D 5FG5F A'E?5 6 -4 ?*:A 2& '&F5E&'6':2-'4& 46 -A5
&G5$'&62:-'4& '& 2D 5?(2? E*?- :152-5 '&5J-1'B
:2+ 5 5E+2112??E5&-(2&F '&6 ':- G152- '&,*1C 4& A'?
4C2 D21-'?2&?('&-4 @A4?5 A2&F? -A5'1 5?-2-5? A2F
2 152FC D2??5F & F 2?-(-A4*GA &4- 52?-(A5 F'?B
A4&4*15F(+C -A'? *&?*'-2+ 5 2&F D15:'D'-2-5 2 '2&:5(
A'? 2-5 ' *?-1'4*? M*55&(-A5 E5E41C 46 @A4?5 -12&?B
:5&F5&- 5J:5 5&:5('6 '- A2F 62F5F '& 2&C F5G155
614E A'? 4@& +152?-(@2? -44 F55D C ?52-5F '& -A4?5

1 ? / - / &# /#/ + $ B / $ + ##B $!d-$ -
+0 $& ? G ' ? ?$ * * #'$ +$ #' $ + ##'$ J
8 $ $/$ $ / ? 7 /# *$ V #'$ / $ & '
$ -- /0> 8$# $ / /(-R +'#'' -'4EB. &?
G? " $' > $?$ $? " +# & & - # *
! $ & , #' -$ /#L *$& G?#&? ?# G # (
$ /*# # '& , / '& += (' (

+ 8 ;S

46 A51 ?*+,5:-?-4 2 4@-A5'1 -4 44H 4&-A5 D15?5&-
*&'4&4-A51@'?5-A2&2?2&2-'4&2''&F'G&'-C

4('&F55F('-A5C F'F 15G21F''-2-A4*GA-A5 D54B
D 5 46 12G4&('&@A4E 2-5 5$5&-? A2F 15H'&F 5F
-A5'1 2&:'5&- ,52 4*?C 46 2?-'5('$'5@5F -A5('E2-:A
@'-A E415 :4ED 2:5&:C('2? 'H5 C -4 15?-415 -A5E -4
-A2- D4 '-':2''ED41-2&:5 @A':A A2F +55& ?4E5@A2-
'ED2'15F +C -A5 *&'4&@'-A -A5'1 E415 D4@516*
&5'GA+4*19

A5 *14D52& &2-'4&? :4* F &4- :4ED15A5&F 2&
2112&G5E5&- ?4 '115:4&:'2+ 5 @'-A -A5 *?*2 ?2G2:'B
4*? D4 ':C 46 -A5 2-A4 ': H'&G A5 D5--C -2 '2&
D4@51?('@A4('?'&:5 -A5 '&-14F*:-'4& 46 12&:5 2&F
D2'& '&-4 -A5'1 D4 '-':2 ?C?-5E('@515 :4&-14 5F +C
-A5E E415 41 5?? '& 2 -A5'1 E4$5E5&-?('$'5@5F
-A'? ?'&'?-51 :4&,*&:-'4& 2? 2*?D':'4*? 46 &4 G44F -4
-A5'1'&-515?-? 41 '&F5D5&F5&:5 ? 641 -A5 1:AF*H5
A' 'D('A5 :4* F ?:21:5 C :15F'- -A5 D4??'+' '-C 46 -A'?
F5?D512-5 2:-('@A':A ?-1*:H 466 2- 2 + 4@ ?4 1':A 2
D41-'4& 46 A'? '&A51'-2&:51 5 ?44& 15:5'$5F :4&B
6'1E2-'4&('A4@5$51('46 '-? -1*-A(' +C 2 D14A'+'-'4&
614E 4*'?Z -4 2--5ED- 2 D2??2G5 -A14*GA A'?
F4E'&'4&? '&-4 D2'&('*&-''A5 ?A4* F :4E5 -4 ?4E5
2E':2+ 5 *&F51?-2&F'&G @'-A A'? 62-A51.'&. 2@ X

1 9 # $ + '#' #0''#'&$- , #' &$'# #+$# '#' $
J J A $ #$ $ + '## 0 * + /# $ /'& # '$' ? G
JJ'###'&$-'J'#' # " ?$?'$ #0 >'* '?'
0$ &$' + '#' >'JJJ $ '$ /' J *' ?' $& #L
&'H:'''###'A'9 # $' + '#' *#& '?'G$'+$D# "' ! I
#0''#'&$-'JJ# A 8 #&&#$ /# #' $>'?' ?# #-'U'0> /# '"
#0''## > *' 0' ?' $ >/ -' *'
6' & #' /' + &? + $ & '?$'' / #' ' + +
:'

; ‘ 8 =

A' 'D(‘ 41‘ 12-A51‘ 2&*5 (‘ @A4‘ 5J51:'?5F‘ ''&A4''&F.‘ 5F‘ '&6 *5&:5‘ 4$51‘ A'?‘ :4*&?5 ?(‘ ?2@‘ A5‘ &5:5??'-C‘ A4@‘ 46‘ -5ED41'L'&G‘ A5‘ :4115?D41'F'U&:5‘ @2?‘ 15?*E5F(‘ @'-A‘ 51F'&2&F(‘ 2&F‘ 2&‘ 2112&G5E5&-‘ @2?‘ 2 ‘ 5&G-A‘ :4&: *F5F‘ +5-@55&‘ -A5‘ D21-'5?(. H&4@&‘ 2?‘ -A5‘ :4&:41F‘ 46‘ 2 2E2&:2(‘ 4$ ‘ ;=-A(‘ < ‘(9 1 '5‘ ?*+?-2&:5‘ 46‘ '-‘ @2?(‘ -A2-‘ 2?-' 5‘ ?A4* F‘ +5‘ G4$51&5F‘ '&‘ -A5‘ ,4'&-‘ &2E5?‘ 46‘ 51F'&2&F(‘ A' 'D(‘ 2&F‘)42&&2‘ +*-‘ -A2-‘ -A5‘ 641E51‘ ?A4* F‘ +5‘ 5&-'- 5F(‘ 2?‘ A'?‘ ?A215(‘ -D‘ 4&5.. 2 6‘ 46‘ -A5‘ D*+ ':‘ 15$5&*5‘ A'?‘ -152-C(‘ .5J5:*-5F‘ '&‘ G44F‘ 62'-A‘ +C‘ -A5‘ 2-A4 ':‘ H'&G(‘ @2?‘ 4& C‘ '&-5&F5F‘ +C‘ A' 'D‘ -4‘ * ‘ -A5‘ ?*?D':'4&?‘ 46‘ -A5‘ 641E51‘ *&-' ‘ U5‘ :4* F‘ 5665:-‘ 2‘ 2&F'&G‘ '&‘ -A5‘ H'&GF4E(‘ @A515‘ A5‘ :4&B 6'F5&- C‘ +5 '5$5F‘ &4-A'&G‘ +*-‘ A'?‘ D15?5&:5‘ @2?‘ @2&-B '&G‘ -4‘ '&?*15‘ ?*::5??‘ 5‘ :4ED 5-5F‘ -A5‘ D516'F'4*?‘ D14:55F'&G‘ +C‘ ?5&F'&G‘ 2&‘ 5D'?- 5(‘ @5 ‘ G21&'?A5F‘ @'-A‘ ?46-‘ 2&F‘ A4&'5F‘ DA12?5(‘ -4‘ A'?‘ 14C2‘ 62-A51.'&. 2@‘ A5?5‘ 21-'6':5?‘ A2F‘ -A5'1‘ 5665:-(‘ 2&F‘ :4ED 5-5 C‘ 'EB D4?5F(‘ &4-‘ 4& C‘ 4&‘ 4*'?(‘ +*-‘ 4&‘ -A5‘ E415‘ ?A15@F‘ 2&F‘ ?*?D':'4*?‘ 51F'&2&F 9

& $ >‘ # ‘ $‘ & /‘ +$ #L $" '# ?$' ‘ #-- /‘ + ‘ *‘ ? '*$# ‘ * # ‘ *‘ +>‘ $- # $ ‘ & L , V‘ Y&‘ Y&‘ 6 ‘& & / ‘ 1G# ?‘ ?# ‘ $-- $‘ ‘ ?#+‘ UN # ‘ $ # ‘ *# #‘ - '$"$ +‹ /# # ‘ ‘ # *# # ‘ ‘ ? # ‘ $&& =‘ # ‘ ?# ‘ ‘ 0 $ #0 ‘ +# *# #L ‘ $+- J$0 ‘ $" $‘ ‘ -$=‘ +$ ‘ '# ‘ $ $ V‘ ?# #-‘ +$>‘ ?$' ‘ ? "?‘ ?# ‘ *$? =# = $G(‘ $ ‘& / &‘ $ ‘ # /#** ‘& +=‘ (+ $ >‘ ‘ ? ‘ U‘ '# ‘ $ $ V‘ ‘ ? ‘ D# "(‘ ‘ , /‘ 0>

‘ $ >‘ # ‘ ?# ‘& - /L &‘ G# ?‘ ? ‘ ‘ / ‘ /# $‘ -‘ & J&### 1‘ $ 0$!$ ‘ $ ‘ ‘ $ ‘ 2@EB A 9 # $‘ + ‘ '# ‘ #0‘ '# ‘ &$-‘ JJ### A $ #$ $‘ + ‘ ##‘ #0‘ JJ'###‘ &‘ J'# A ‘ $ > ‘ - ‘ -# ‘ -‘ &&J&##‘ AV 9 # $‘ ?$‘ $ & #0 /‘ ? ‘ G? ‘ *‘ ?# ‘ / #* ‘ $ /‘ + $‘ '# "‘ -# ‘ &‘ &# .

8 #&&#$ /# # & #/ ‘ ?# #-‘ $‘ >‘ - $& # # "‘ ? ‘ ‘ ? ‘ ?$/‘ $ /‘ # ‘ -$# ‘ U‘ ‘ $ #

6 8 ; <

&' -A5' S-A' 46')2&*21C' < (' A' 'D' 2&F')42&&2' 5E+21H5F'4&' +421F' 2' ?D 5&F'F' 2&F' &*E514*?' 21E2F2(' F&F' ?5-' ?2 !(614E' 2' D41-' '& V52 2&F' '6*1'4*?' -5EB D5?-' ?:2--515F' -A5' 6 55-' UU44& 26-51' 52$'&G' A21+4*1',' A' 'D0?' ?A'D(' @A':A' -4DH' 6'15' '&' -A5' ?-41E(' &2114@ C' 5?:2D5F' 64*&F51'6-GN('2&F' '-' @2?' &4-' @'-A4*-' G152-' F'66':* -C' -A2-' -A5C' ?*::55F5F' '&' +1'&G'&G' A51(' 2' E'B ?512+ 5' @15DH(' '&-4' -A5?' &G '?A' D41-' 46' 5CE4*-A 9' T'&G' 5-'1C' (' 4&' 521&'&G' -A5' E'?641-*&5?' 46' A' 'D' 2&F' A'?' :4&?41-(' @2?' D14ED-' -4' ?A4@' 5$51C' E21H' 46' 15?D5:-' 2&F' :4&?'F512-'4&' 641' -A5' 14C2 ' D2'1(' ,,A*?' -A14@&' *D4&' A'?' '? 2&F ' A5C' @515' 5?:41-5F' '&' E2G&'6':5&-' ?-C 5' -4' '&F?41(' 2&F' F5-2'&5F' @'-A' F*+'4*?' A4?D'-2 '-C' 641' &521 C' -A155' E4&-A?' *1'&G' -A'?' -'E5(' 5&1C' ' 2$2' 5F' A'E?5 6' 46'-A5' ?'-*2B -'4&' 2&F' '&5JD51'5&:5' 46'A'?' C4*&G' G*5?-(' ?4' 621' 2?' -4' 5J-41-' 614E' A'E' -@4' -152-'5?(' &4-' 2 -4G5-A51' 15:4&B :' 2+ 5(' 2?' 621' 2?' -A5' 2--51' @2?' :4&:51&5F(' @'-A' ?4*&F' D4 ':C' 41' A4&4*1 6' A5' 15?D5:-' @A':A' -A5' &G '?A' E4&21:A' 5&-51-2'&5F' 641' 51F'&2&F' -A5' 2-A4 ':(' 2?

-$" V' #$' #0' '## .' ?' -? $ 'G /' +' '?$' ' 0 ' - ' 0#$' G# ?' ?' $L #$ ' #D ' ?' W' #&$' *#/ (' G?#&?' ? #' +$ ' $ & ' *$ /' ' ?' &?$ $& ' *' ? #' * #&$ ' +><A - ?$-' G# ?' , $'! #& I' P $ $' $&& /# "' ' $ L / '$' /# - $> /' + &?' & + - L ' #' ? '$$ +# "' # $ # ' 7? ' # * + /' 0>' ?# #-' *' ? #'/$ " ' ?'$ # /'? *' # ' ? ' #&? ' / ' & # "' $

& #/ $0 ' +' *' + >' ' ? ' - ' ?$' ? ' 0 />' #*' * /' +#"?' 0 ' & " # /' $ /' & #' ' ?' 0 , # ' # /' ' ? ' $ D' 6# ' / ' $ ' : ' +' #' -' 2E ' +$ / K' ' &$-' &&#' ' A' $ 0$!$ ' $ ' ' $## ' 'A' ' 8 $# ' -' 23B A' $& ' 6# ' *' 6 >' : ' 7 D ' ' ' : ' --' 2)) A' 2)5 A 8 #&&#$ /# #' #0' '##' A' >=' + ' +/ $' +' J###' --' 2 ' A 24F'

s

@5 2?-A5'1 62E'C:4&&5J'4&(5F A'E -4 46651 A'? ?51$':5? 2? 2 :4EE4& E5F'2-41 +5-@55& -A5 62-A51 2&F ?4& 5 @4* F A2$5 D51?*2F5F -A5 2--51(?2C? 41F 2:4&(R -4 +5 1* 5F +C -A5 :4*&?5 46 2 D1'&:5(?4 D1*F5&-(?4 5JD51'5&:5F(2&F ?4 641-*&2-5 2? T'&G 51F'&2&F-4 @A':A -A5 21:AF*H5 15D '5F(R 6 A'? 62-A51.'&. 2@ @4* F 5- A'E G4$51& 2?-' 5(A5 ?A4* F G4$51& A'E K9

- 5&G-A(A' 'D(A2$'&G 152??5E+ 5F A'? 5E'?A 6 55- 2- 5CE4*-A(5E+21H5F @'-A)42&&2 2&F A'? &*E514*? ?*'-5 46 :4*1-'51? 2&F E''-21C 15-2'&51?(2&F 152:A5F 41*&2('& -A5 &41-A.@5?-51& :41&51 46 2':'2(26-51 2 D14?D514*? $4C2G5(4& -A5 ;S-A 46 D1'

?A41- -'E5 D15$'4*? -4 -A'? 5$5&-(-A5 4&F5 F5 '6*5&-5? A2$'&G D2??5F '&-4 12&:5 641 -A5 D*1D4?5((-A5 +5-14-A5F +1'F5 46 T'&G 51F'&2&F M*'--5F -A2- :4*&-1C *&F51 A'? 5?:41-(2--5&F5F +C 2 +1' '2&- 15-'B &*5 46 15&:A 2&F 52D4 '-2& 41F? 6 &-A5 +41B F51?(2- 4&-212+'2(?A5 @2? 15:5'$5F +C -A5 1:AB +'?A4D" 46 212G4??2(51F'&2&F0? &2-*12 ?4&(@'-A 2 &*E514*? 15-'&*5(:4ED4?5F :A'56 C 46 12G4&5?5 2&F 2-2 2& &4+' '-C(2&F :4&F*:-5F @'-A E*:A ?4 5E&'-C -4 *5&2?(@A515 ?A5 @2? ,4'&5F +C -A5 H'&G &' -A'? D2:5(@A515 -A'1-C C521? +5641595 A5 A2F +55&

G$ $& ++ &#$ $ > / $& 6# *6 > G# ? $ / /# $ $: ' M' - 2)5 0 D G # ?$ #> 0> ? $+ * '# / ; # & $" $ 3 3 ? ? # ' ' / ? $ 2 , # & F /#$ 4B A + / * ? # * $ / $>$ / &? JJ' # D * ** D

*&'-5F -4 ?2+5 2(A5 &4@(/ 21:A <S-A(< (7 27 '6 -4 5E+'--51 ?-' 6*1-A51 -A5 15:4 5:-'4&? 46 -A5 D2?-(5F -4 -A5 2 -21 A51 C4*&G 2&F +52*-'6* ? *::5??41 I -? 55E5F A21F(K ?2C? 21-C1('& A'? M*'5- @2C(-A2- -A5?5 &*D-'2 ? ?A4* F -2H5 D 2:5 ?4 ?44&(2&F -A2- -44 '& ?2+5 2 ? 4@& H'&GF4E 46 2?-' 5(@A515 ?A5 A2F '$5F @'-A4*- D551(2&F @A515 A51 2?A5? 215 ?-' A5 F '& 2? E*:A $5&512-'4& 2? ?A5 5&,4C5F @A' 5 '$'&G K9

- @2? 5?? -A2& ?'J @55H? 26-51 -A'?(-A2- A' 'D 2&F)42&&2 2&F5F 2- 41*&2 51F'&2&F(@A4 A2F 5JD5:-5F -A5E '& ?4E5 &52151 &41-A51& D41-(D15D21B 5F @'-A4*- 4?? 46 -'E5 -4 G4 641@21F 2&F 15:5'$5 -A5E 5 ?5&- 4& 2& 5JD15?? -4 2112&G5 -A5 D 2:5 46 E55-'&G @'-A A' 'D(2&F 2F$2&:5F A'E?5 6 2? 621 2? 54& *- A' 'D A2F &4 '&-5&-'4& 46 ?*:A 2& '&-51$'5@ 2- D15?5&- 5 A2F D*1D4?5 C 2&F5F '& 2 15E4-5 :41&51 46 -A5 :4*&-1C('& 41F51 -4 G2'& -'E5 641 A'? D21-'?2&? -4 :4E5 641@21F 2&F F5: 215 -A5EB ?5 $5? '??'$5? A2F +55& F5?D2-:A5F -4 -A5 D1'&:'.(D2 &4+ 5? 2&F :2$2 '51?(2&F -A5C @515 2&?@515F +C G152- &*E+51? 46 2 12&H?(@A4 D15??5F 641@21F -4

1 $ > - -# -
&&& A ; # & $" $ / 8 K$
6 $ / K / >#/ $
2 , # & & /#$ 4B A $ 0$!$
$ $## 2@EB A =
$ / K 6# &$- &&###
! 2 $> 9 =
$! ?$ $0 $ 0 * $-L
- # # " ? ? 0$ / ? L
" &> J$& / $ $?* +?#+
?$? G / +$ > L

& / # + R $ + ' ' #0 ' '
& JJJ#' . ?# '#+- 0$0 >
& # G# ? ? , C
&?$ $& ?$ 0 $ & #0 /
G# ? + , $#*#&$ #
0> && /# " ?# #$ * +
$ #$ $; # $ $ 0 L
- $ #' G# ? $ > , $L
#*#&$ # $ $ $ 6# > *
?$: ' ' ## - B

; = ' 8

@5 :4E5' 2&F' D2C' :4*1-' -4' -A5' C4*&G' E4&21:A 9'
E4&G' -A5E' @515' -A5' &2E5?' 46' E4?-' 46' -A5' :4&?'B
F512+ 5' 2?-' '2&'62E' '5?N 2&F'?5$512 (' 2?' ' 5&2' 2&F'
2,212(' @515' 2::4ED2&'5F' +C' 21G5(' @5 .2DD4'&-5F'
15-'&*5?' 46'21E5F'64 4@51?' A5' 21:AF*H5' +14*GA-'
4$51'@'-A' A'E' 2' +4FC' 46' ' 51E2&' '&62&-1C' '&'
:4ED 5-5' 41F51' 5' ?44&' E*?-515F' 2&' 2FF'-'4&2'
641:5' 46' '&2-'$5' D2&'21F?(' @A':A(' @'-A' -A5' :A'B
$2 1C' @A4' -A14&G5F' -4' E55-' A'E(' D 2:5F' A'E' '&' 2'
:4&F'-'4&' -4' F':-2-5' -51E?' -4' A'?'62-A51.'&. 2@'N 2&F'
A5' &4@' 4D5& C' D14: 2'E5F' -A2-' A5' A2F' &4' '&-5&-'4&'
46'2+'F'&G' +C' -A5' :4&:41F' 46' 2 2E2&:2(' 2&F' -A2-' A5'
@4* F' &5$51' :4&?5&-' -4' 2&' 2112&G5E5&-' D15,*F':'&G'
'&' 2&C' F5G155' A'?' 2&F' A'?' @'650?' 5J: *?'$5' D4??5??'4&'
46'-A5' :14@&' 46' 2?-' 5 6

-' @2?' '&' $2'&' -A2-' 51F'&2&F' 5&F52$4*15F' -4' G2'&'
4&')4A&' 2&*5' -4' A'?' '&-515?-?' +C' -A5' E4?-' '+512'
46651?' 5' :4* F' 46651' &4-A'&G' -4' :4ED5-5' @'-A' -A5'
2+?4 *-5' 2?:5&F2&:C' @A':A' -A5' 62$4*1'-5' A5 F' 4$51'
A'?' C4*&G' ?4$515'G&' -' @2?' '&' $2'&' -A2-' 21-C1(
2&F' 26-51@21F?' Z'E5&5?(' @515' ?5&-' -4' -A5' 21:AF*H5(
-4' ?5-- 5' -A5' G14*&F?' 46' 2::4EE4F2-'4&(' 41'2-' 52?-'
-A5' D 2:5' 46' '&-51$'5@' @'-A' -A5' H'&G' A' 'D' '?-5&B
5F' -4' -A5E' @'-A' :4*1-5?C(' +*-' @4* F' 2+2-5' &4-' 2',4-

I' !' ; # , ' +'# ' - ' $' JJ#J'HHH'A'8 + &# ' ' L
- J- /# '& ++ /' = 0 '8 'H#+ '* '@) A $'
'# / +V' $>$8# '# 0 G# "' / ' ' $$&# ' '&$-'&&#' A'
?'*$+##$' + $-? 'U' ' #= ' $ > ' - ' -# ' -'
+' +' - # $', $+' &&#=' &&&#'' &&&'' A'8$# / K' / ' $L
/ +'$/ $ / +' '/#& # $=' 0$!$ ' '$## '2@EB'A' $ / L
0$ V' :# $' ' :# '-'F)3' '$' 6# ' / ' $ ' : ' +'#
' 9 # $' +'' #0 '#'&$- 1-' 2E

46' A'?' D15-5&?'4&?M' 2&F' 2&*5 ' F'F' &4-' :215' -4' 5JB D4?5' A'?' 14C2 ' E2?-51' -4' -A5' '&6 *5&:5' 46' 51F'&2&F0?' ?*D51'41' 2FF15??' 2&F' ?2G2:'-C' '&' 2' D51?4&2 ' '&-51B $'5@ 9

21-C1' G'$5?' 2' D':-*15(' +C' &4' E52&?' *&62$4*12+ 5(' 46' A' 'D' 2-' -A'?' -'E5 ' 5' A2F' 2&' 2G1552+ 5' D51?4&(' 2' G5&514*?' F'?D4?'-'4&(' 6155' 2&F' 4D5&' E2&&51?(' @'-A' 2' :51-2'&' &4+ 5&5??' 46' ?4* (' 2 -A4*GA' ?D*115F' 4&' +C' 2' E4?-' :12$'&G' 2E+'-'4&M' +*-' A5' @2?' ?4' 'G&412&-' 46' 2662'1?(' -A2-' A5' +5:2E5' -A5' F*D5' 46' 21-6*' ' E5&(' @A4' D 2C5F' 4&' A'E('641' -A5'1' 4@&' D*1D4?5?"7"

51F'&2&F(' 2-' 5&G-A('6'&F'&G' -A2-' A' 'D(' @A4' A2F' &4 @' 56-' 41*&2(' @2?' 2F$2&:'&G' +C' 2' :'1:*'-4*?' 14*-5' '&-4' -A5' '&-51'41(' 4&' D*1D4?5' -4' 2$4'F' A'E(' 2&F' -A2-' 2 ' 2::5??' -4' A'?' F2*GA-51' @2?' 2+?4 *-5 C' 156*?5F(' :4* F' &4' 4&G51' 15D15??' A'?' '&F'G&2-'4&(' 2&F' A5' D15D215F' 2' :'1:* 21(' -4' +5' ?5&-' -4' -A5' F'66515&-' D21-?' 46' -A5' :4*&B -1C(' :2 '&G' 4&' '-' -4' 1'?5' 2&F' 2'F' A'E' '&' 15?:*'&G' -A5' M*55&' -A5'1' ?4$515'G&' 614E' A51' D15?5&-' ?A2E56*' ' :2DB -'$'-C')' -' F45?' &4-' 2DD521' -A2-' A5' ?5&-' '-' 5' D14B +2+ C' 64*&F' -A2-' -A5' :2 ' @4* F' &4-' +5' 2&?@515FM' 641' -A5' 15&:A' E2-:A' A2F' 4?-' A'E' 5$5&' -A2-' F5G155

I' ' $ > ' - ' -# ' -' &&&'#'&&&'###'&&&#J A ' 8 + =' &# '* ' @5' A' 'P '# ' :# ' 222' :# ' -'F)3

*' R' #'0 #" # ' ?#-- '#' & # ' ' ' # ' 0#' - # &#=' -' $ #+ # '# '! ' ' - =' & =# V' Y&' -# '&& JJJ'.' ' $' 0 , ' '?' ? ' / L & #0 ' ?' ?$--' - /#&$+ ' *' ?' > '" - # & .' U' &#

?#'! ' # ' &#', ' ' ' $ ' ?# &'$'$ # ' # # &'$+0# # # ' $ =' , ' ##+, ' '$* # '? +# #0 ' &# & + - ' $# #" $' ? ' $ ' $- #, ' $ # ##' $=' ? ' # ' /#' $' - 0$0# ' #- ' $, ' 0 / ' + #$' & * / ' # $+' '$ $' - /#& +'5' -# '&&&'### P' 9 # $' $ ' / ' +" ' +' '#' #0' '##' &' ##

46 62$4*1 @'-A @A':A A5 A2F +55& 15G21F5F +C -A5 :4E E4&?ℕ ?4 -A5 $51C 5JD5F'5&- 4& @A':A A5 15 '5F 641 D51D5-*2-'&G A'? 2*-A41'-C '& 2?-' 5 @2? -A5 :A'56 :2*U5 46 A'? 4?'&G '- 2 -4G5-A51

5 @2? F44E5F -4 5JD51'5&:5 ?-' E415 E41-'6CB '&G '&F'G&'-'5? C -A5 41F51? 46 -A5 21M*'? 46 ?.' -41G2 2&F -A5 4*&- 46 5&2$5&-5(A5 @2? 2:-*2 C 156*?5F 2FE'--2&:5 '&-4 -A4?5 :'-'5?ℕ @A' 5 D14:2B E2-'4& @2? E2F5 +C -A5 ?2E5 2114G2&- 41F?(D14B A'+'-'&G 2&C 46 -A5'1 $2??2 ? 614E 2'F'&G 41 A21+4*1B '&G A'? 12G4&5?5'64 4@51? R ?2F ?D5:-2:5('&B F55F(K 5J: 2'E? -A5 4C2 21-C1(R -4 +5A4 F 2 E4&B 21:A(C5?-51F2C 2 E4?- 4E&'D4-5&-(-A*? @2&F51'&G 2 $2G2+4&F '& A'? 4@& H'&GF4E(156*?5F 5$5& -A5 ?'GA- 46 A'? 4@& :A' F PK 9

6 2 -A5 G2C -1'+5 46 :4*1-'51? @A4 6*--515F 214*&F A'E '& A'? D14?D51'-C(-A5 4& C 2?-' '2&? 46 &4-5 @A4 &4@ 15E2'&5F -1*5(@515 -A5 *H5 46 $2 2&F -A5 4*&- 46 '6*5&-5? 641 5$5& A'? ?4&.' '&. 2@(-A5 4&?-2+ 5 46 2?-' 5(A2F F5?51-5F A'E A515 @515 ?4E5(A4@5$51(2- 2 F'?-2&:5 614E -A5 ?:5&5 46 4D512-'4&?(2? -A5 G44F 2 2$512(641 '&B ?-2&:5(2&F -A5 4*&- F5 5&F' 2(@A4 ?2@ @'-A E*:A :4&:51& -A5 D14?D5:- 46 :A2&G'&G -A5 ?-52FC 2&F @5 .-1'5F A2&F(@A':A A2F A5 F -A5 A5 E 641

I - -# -# '&&&'### # ?# *# /0$ $/ G /
U > $ >/ -$ $' +?$ / > J $'$"$ '#'
> ' > / $ '# $.' ? + ? *?# >$ / & /L
$> '# $ >'&$ # $ R
> # "#+ - >$! - $+#& - #++'
$> #$ & #$/ V Y& -$ # $/' $ - 0$ V A'
? $+ * Q# "' / #& 0 >

' 7 6' 6 ;

E415' -A2&' -A'1-C' C521?(' 641' -A5' :2D1':'4*?'G*'F2&:5' 46'
A' 'D' 2&F' A'?' 62$4*1'-5? 9

&' 5&F' @2?"2-' 5&G-A' D*-' -4' -A'?' ?:2&F2 4*?' 5JB
A'+'-'4&(' 2&F' 2&*5 (' @A5-A51' 614E' '&:152?5F' :4&6'B
F5&:5' '&' A'?' 4@&' 15?4*1:5?(' 41' -A5' 6521' 46' +1'&G'&G'
D*+ ':' 4F'*E' 4&' A'E?5 6(' :4&?5&-5F' -4' -1*?-' A'?' 14C2'
:A21G5' -4' -A5' D51'' 46'2&' '&-51$'5@' A5' D 2:5' ?5B
5:-5F' @2?' 2&' 4D5&' D 2'&' &521' *5+ 2' F5' 5&2+1'2('
4&' -A5' +41F51?' 46' 54&' 2&F' 2':'2(')*&5; 1F' *-('
5$5&' -A5&(' -A5' D15:2*-'4&?' -2H5&' @515' 46'2' H'&F' -1* C'
F':14?(' :4&?'F51'&G' -A5' 641 41&' :4&F'-'4&' 46' T'&G'
51F'&2&F' A5' @A4 5' E''-21C' 2DD212-*?' 46' -A5'
21:AF*H5' @2?' D*-' '&' E4-'4&(' 2?' '6'A5' 5JD5:-5F'-4' @'&'
-A5' :14@&' +C' +2-- 5' '1?-' :2E5' -A5"@5 .2DD4'&-5F'
51E2&(' ?D521E5&(' 2' '&' 6'GA-'&G' 41F51M' -A5&(' -A5'
?A'&'&G' ?M*2F14&?' 46' -A5' &4+ 5' 2?-' '2&' :A'$2 1C' 2&F'
-A5'1' 21E5F' 15-2'&51?M' &5J-' 64 4@5F' -A5' 21:AF*H5('
?52-5F' 4&' A'?' @21.A41?5' 2&F' 5&:4ED2??5F' +C' A'?' +4FCB
G*21F'M' @A' 5' -A5' 1521' @2?' : 4?5F' +C' -A5' 4&G' 6' 5?' 46'
21:A51?' 2&F' 'GA-' :2$2 1C' 46' -A5' :4*&-1C 6

51F'&2&F(' 4&' -A5' 4-A51' A2&F(' :2E5' '&-4' -A5' 6'5 F'
2--5&F5F' +C' 2+4*-' -@4' A*&F15F' &4+ 5?' 2&F' G5&- 5B
E5&(' :A'56 C' 12G4&5?5' 2&F' -2 '2&?(' 1'F'&G' 4&' E* 5?('
2&F' ?'1&,FC' 2--'15F' '&' -A5' ?A41-' + 2:H' : 42H' 2&F' +4&.

I' - -# - &&&'# &&&J# A' - +-' *' G$' G$' ?' + '
0 !:#/$/ ' $ /' H#+ ?$' ?'D# "' G$' '>#' "'$& L
h' 2(4' A $ #$ $' +'##' #0' #/ $0' * & '$ /' ?' D' *'
JJ'###' &$-' J#J A $ K$' 6# ' '$' + # "' ?#' * G '#'
&& '>' & $' +'#' #0'# <' A' + 'G# # " >' &#K-'
i' J#J A $ / '$' 6# '/' $L & $ /' '/ 0'#*' '$' ? '
':' +'#' -' 2E / '#& ' *' ?' +> A 9# # $'
c' A5' 4&C'D15-5J-'6412' -A'? #0' '##' &$-' ##

&5-' 46' -A5' :4*&-1C(' @'-A' &4' 4-A51' @52D4&' -A2&' -A5' ?@41F' *?*2 C' @41&' A5' H'&G' -&'?-5F(' ?2C?' V*1'-2(' -4' -A5' E2,5?-C' 46'A'?' D15?5&:5(' 2&F' -A5' 15D*-2-'4&' A5' A2F' 2:M*'15F' +C' A'?' 4&G' 2&F' 2+ 5' 2F E'&'?-12-'4&

A5' 2?-' '2&' &4+ 5?(' +14*GA-' '&-4' :4&-2:-' @'-A' 51F'&2&F(' :4* F' &4-' @5 ' 2$4'F' D2C'&G' -A5'1' 4+5'B ?2&:5' -4' A'E ' 5' 15:5'$5F' -A5E' '&' A'?' *?*2 ' G12:'B 4*?' 2&F' 2662+ 5' E2&&51(' E2H'&G' 15E21H?(' -A5' G44F' A*E4*1' 46'@A':A'@2?'4::2?'4&2 C' ?52?4&5F'@'-A'?4E5B -A'&G' 46' 2' E415' D*&G5&-' :A212:-51 ' 4' -A5' *H5' 46' 2,212(' @A4' @2?' &4-5F' 641' +5'&G' 2' $2'&.G 41'4*?' D51?4&(' 2&F' @A4' :2E5'641@21F'@'-A' 2' G2 2&-' 15-'&*5' '&' 2 ' -A5' D2&4D C' 46'@21(' A5' 5J: 2'E5F(' I ' 4(' F*H5(' C4*' 215' E'&F6* ' 2?' 5$51(' ' ?55(' 46'-A5' F*-'5?' 46' 2' G152-' :2D-2'&P K' E4&G' 4-A51?' @2?' 21:' 2??4' F5' 2' 5G2(' 51F'&2&F0?' E'&'?-51' 641E51 C' 2-' 4E5 ' 'H5' E2&C' 46'-A5' 2?-' '2&' 41F?(' A5' @415' 21E4*1' *&F51' A'?' F15??(' -A5' +5--51' -4' G*21F' 2G2'&?-' ?*1D1'?5 ' A5' H'&G' 5EB +12:'&G' A'E' 65 -' -A5' E2' ' +5&52-A(' 2&F(' -2DD'&G' A'E' 62E' '21 C' 4&' -A5' ?A4* F51(' ?2'F(' R' ' :4&G12-* 2-5'C4*(' 21:' 2??4M C4*' A2$5' G14@&' @4&F516* C' *?-C' ?'&:5' @5' 2?-' E5- K' A5' F5?51-'4&(' A4@5$51(' 46' 4&5' @A4' A2F' 15:5'$5F' ?4' E2&C' 62$4*1?' 614E' A'E(' -4*:A5F' A'E' E415' &521 C' -A2&' 2 ' -A5' 15?-

?' A' 'D' F15@' &521(' '-' @2?' 4+?51$5F' A5' @415' 2&' 2&J'4*?(' 5E+2112??5F' 2'1(' @A' 5' A'?' 62-A51.'&. 2@' E2'&-2'&5F' -A5' ?2E5' ?515&5' 2&F' :A5516* ' 2?D5:-' 2?' *?*2 ' 6-51' 5J:A2&G'&G' ?2 *-2-'4&?(' -A5' -@4' ED&.' 21:A?' 2 'GA-5F(' 2&F' 5&-515F' 2' ?E2 ' A51E'-2G5' '&' -A5' &5'GA+4*1A44F(' 2--5&F5F' 4& C' +C' 2&*5 ' 2&F' 1:A.

+'?A4D' Z ' E 5&5?' A5C' A2F' &4' ?44&51' 5&-515F(' -A2&' -A5' 2--51(' 2FF15??'&G' -A5' 62$4*1'-5' @'-A' 2&' 2'1' 46' 2*-A41'-C' '-' @2?' &4-' 52?C' -4' 15?'?-(' -4 F' A'E(' R' -' @2?' &4-' E 55-' -4' '&-1*F5' 4&' -A5' D1'$2-5' :4&:51&?' 46' -A5'1' E2?-51?' 2&F(' -2H'&G' A'?' 21E(' 5F' A'E' 4*-' 46' -A5' 2D21-E5&-' 2&F' :44 C' 4:H5F' -A5' F441' 4&' A'E(' ?2C'&G' 2-' -A5' ?2E5' -'E5(' -A2-' R' A5' @4* F' ?51$5' 2?' D41-51 K' A5' :4&6515&:5' 5F' -4' &4' 15?* -' A' 'D' @2?' @5 ' ?:A44 5F' '&' A'?' D21-(' 2&F' 15E2'&5F(' ?2C?' 21-C1(' 'E E4$2+ 5' 2?' 2' 14:H 9' A515' @2?' ?4' '-B - 5' E*-*2' :4&6'F5&:5' +5-@55&' -A5' D21'-'5?(' -A2-' -A5' &2E5' 46') 42&&2(' @A4E' 51F'&2&F' F5?'15F' ?4' E*:A' -4' ?55(' @2?' &4-' 5$5&' E5&-'4&5F' F*1'&G' -A5' '&-51$'5@ P

*-(' A4@5$51' 15 *:-2&-' 51F'&2&F' E'GA-' +5' -4' 2FE'-' '-(' A5' @2?' &4' 4&G51' '&' :4&F'-'4&' -4' ?-2&F' *D4&' -51E?' M 2&F(' '&' 2FF'-'4&' -4' -A5' 5&-'15' 4??' 46' '&6 *5&:5' '&' 2?-' 5(' A5' 15:5'$5F' ?*:A' 2 21E'&G' 2:B :4*&-?' 614E' 2D 5?' 2?' E2F5' A'E' F5-51E'&5' 4&' 2&' 'E E5F'2-5' $'?'-' '&' D51?4&' -4' -A2-' H'&GF4E' 5' 15B ?4 $5F(' -A5156415(' -4' +4@' A'?' A52F' -4' -A5' D15?5&-' ?-41E(' '&' A4D5?' -A2-' 2' +1'GA-51' F2C' @2?' '&' 15?51$5' 641' A'E' 5' ?2@' -A5' ,52 4*?C' A4*1 C' ?D1'&G'&G' *D' +5-@55&' -A5' 5E'?A' 2&F' 2?-' '2&' :4*1-'51?(':2&F' A5' D14+2+ C' 2&-':'D2-5F' ?*:A' E'?1* 5(2?' @4* F' 2661F' 2&

I' U' # ' $ &$ $' $- '-$= + $' #?#'$ & $'# V' -# ' &&&J

2(B' A 2(5 A $ #$ $' +'## '#0' JJ'###' &' JJ A 9 # $' +' N'#' #0' '##' &$-' ' A 8 + &# ' ' 0' 8 'H#+ '* 'B2'BF' A 0$ &$' +'##' 'JJJ'&'J'' A= $ 0$!$' $' '$? '2@EB' A +$ / K' 6# ' '&' &&#'

-' $'5F4(b*'&:*2G5&2?(' 2-' <(M*'&:' (F'2' = >' 4+5?('F2' F5 Z'E5&5?(DD

4D5&'&G(' D51A2D?' @'-A' -A5' G44F' @' ' 46' -A5' &2-'4&(' 641' A'E' -4' 15?*E5' -A5' 15'&?' ?4' *&:515E4&'4*? C' ?&2-:A5F' 614E' A'?' G12?D 9' -' 2&C' 12-5(' ?A4* F' 64::5' A5' &5:5??21C(' A5' @4* F' +5' +5--51' 2+ 5' -4' 5ED 4C' '-' 5665:-'$5 C(' @'-A' -A5' 2'F' 46' A'?' 2 C' -A5' 15&:A' H'&G(' 26-51' A5' A2F' 2F,*?-5F' -A5' 2662'1?' 46' 2D 5? 6

A2-5$51' :4&?'F512-'4&?' E2C' A2$5' '&6 *5&:5F' -A5' D1*F5&-' E4&21:A(' A5' 2*-A41'L5F' -A5' 1:A+'?A4D' 46' 4 5F4(' @A4' H5D-' &521' -A5' D51?4&' 46' -A5' 21:AF*H5(' -4' :4&?5&-' -4' 2&' 2::4EE4F2-'4&' 4&' -A5' $51C' G14*&F?' D14D4?5F' +C' -A5' 2--51' &' -A5' ; -A' 46')*&5(' A5' ?'G&B 5F' 2&F' ?4 5E& C' ?@415' -4' 2&' 2G155E5&-(' +C' @A':A' A5' ?*115&F515F' -A5' 5&-'15' ?4$515'G&-C' 46' 2?-' 5' -4' A' 'D' 2&F')42&&2(' 15?51$'&G' -4' A'E?5 6' 4& C' -A5' 12&F.' E2?-51?A'D?' 46'-A5' E' '-21C' 41F51?(' @'-A' -A5' 15$5&*5?' ?5:*15F' +C' ?2+5 20?' -5?-2E5&-'%N

&' -A5' 64 4@'&G' F2C(' A5' 5J5:*-5F' 2&4-A51' '&?-1*B E5&-' 46' E4?-' ?'&G* 21' 'ED41-(' '&' @A':A(' 26-51' 2$4@B '&G' '&' *&5M*'$4:2' -51E?' A'?' F2*GA-510?' '&:2D2:'-C(' A5' 5&G2G5?' -4' 2??'?-' A' 'D' '&' D15$5&-'&G' 2&C' '&-51651B 5&:5' '&' A51' +5A2 6(' 2&F' -4' E2'&-2'&' A'E(' 2?' 621' 2?' '&' A'?' D4@51(' '&' -A5' ?4 5' 5J: *?'$5' 2*-A41'-C'N

' /' $& ' +$ D '#' $L #+$# ' *' ? #' - &#' ' # ' ' ?#-' - +$ ' &?$ $& .' * ' ?'-$ # ' ' ' / $?' U' ? 'G$'$' 0 '$L + '$"$#'$* ' /# $ /'G# ?L # '0>' ?'G# ' *' ?$'& ' / G' ' $" ?$'#*' ?' ?$/' #' /'?#'*$?' X' 9 # $' +' '#' #0' #' G /'?$' '"$# /' - '?#+'#' &$-' '### ?$' '$'?'G /'?$' '" L P' $' /' ' $$&# ' ' ' /'?#'& &# '$ /'/ #" ' &' &0#'' A' $ 0$!$' ' $ ' #*' '?#'$** &# V' 6# ' *' 2@EB A 9 # $' +' '#' #0 '##' 6 >' : ' 7 D' ' ''-' &''##' A' ' $ >' - ' -# ' 23E.' ?'- /#& # '+ '?$' ' -'&&J 0 ' "" /' 0>' ?' " $ a' 9 # $' + '#' 2' '##'&' '###

56415 ?'G&'&G -A5?5 D2D51?(A5 D1'$2-5 C E 2F5 2 D14-5?-('& -A5 D15?5&:5 46 ?5$512 @'-&5??5?(-A2- @A2- A5 @2? 2+4*- -4 F4 @2? &4- 46 A'? 4@& 6155 @' (+*- 614E &5:5??'-C(-4 5J-1':2-5 A'E?5 6 614E A'? D51' 4*? ?'-*2-'4&(2&F ?A'5 F -A5 :4*&-1C 614E -A5 'ED5&F'&G 5$' ? 46 2 :'$' @21 5 :4&: *F5F @'-A 2??51-'&G -A2-(?4 621 614E 15 '&M*'?A'&G A'? : 2'E? -4 -A5 15G5&:C('- @2? A'? F5?'G& -4 5&641:5 -A5E(2? @5 2? -4 15?:*5 A'? F2*GA-51 614E A51 :2D-'$'-C(2? ?44& 2? A5 @2? '& 2 :4&F'-'4& -4 F4 ?4 9 '&2 C(A5 :4ED 5-5F -A'? :A2'& 46 '&:4&?'?-5&:'5? +C 2FF15??'&G 2 :'1:* 21( ) * C <?-(-4 -A5 F'66515&- D21-? 46 -A5 H'&GB F4E(2&&4*&:'&G A'? 15?'G&2-'4& 46 -A5 G4$51&E5&- '&-4 -A5 A2&F? 46 A' 'D 2&F)42&&2(2&F F5: 21'&G -A5 2:- 4&5 @A':A(&4-@'-A?-2&F'&G A'? 4@& 1'GA- 2&F D4@51 -4 -A5 :4&-121C(A5 A2F D15$'4*? C F5-51B E'&5F 4& 5J5:*-'&G(?4 ?44& 2? A'? :A' F15& ?A4* F ?5- 644- '& D2'&

- '? &4- 52?C -4 15:4&:' 5 -A'? E4&?-14*? -'??*5 46 '&:4&G1*'-C 2&F F'??'E* 2-'4& @'-A 2&C E4-'$5? 46

1 9 # $ 0# - $
X 0#/ + 0# -
/# $ /(+$ #* '$ G
$? # + / & $ # "? #
/$ "? (# &$-$&# > $ '"#' '
$ " ?0>9 # $? & '
- ? ? ? -- /
$? # > *' ? ?# #$ < $ /
> $0 '$? # > &$ '
$ # > 0 * / & #/ # "? #
- J#+# > ? ? - # / ?# L
& $ $ $ # $?# # "#$
-? '$ / ? J + '&$ # '$ /
&$ / 'G# ? G?#&? ? /# & #+#L

$ 0 G *$& $ / + '
'# ' > +$ D$0 ? G ' '
?$ $ > G# ? ' >
-- # >* '# * +$ # '$ '$
+ +0 = * ? >$? ? / '
$--$ > ?#"? # ? D# "('
& *#/ & ? /?$' +$/ '
$ # ? ?# & - '# '
?# & - / & G# ? =
/# $$ /($$' $0 ?$ $&?L
/ ? >$ -$ > $ / '
G? +? $-- $? ?$' & +L
+ #&$ / $ +$ * # L
G# ? '

; 8 6 8

&5:5??'-C 41 5JD5F'5&:C AC ?A4* F A5(?4 ?44& 26-51 D15D21'&G -4 12'?5 -A5 H'&GF4E '& A'? F2*GAB -510? :2*?5(-A*? D*+ ': C 2$4@ A51 'E+5:' '-C(2&F F5D4?'- -A5 @A4 5 2*-A41'-C '& -A5 A2&F? 46 A' 'D 0 2? '- -4 +1'&G 4F'*E 4& -A5 A52F 46 -A5 2--51(+C 5&:4*12G'&G A'E -4 2 E52?*15 @A':A A5 H&5@ E*?- F'?G*?- -A5 2?-' '2&? 0 9 *- 51F'&2&F +C -A'? $51C 2:- ?A215F -A5 15?D4&?'+' '-C @'-A A'E 2?' '- '& -A5 5JD5:-2-'4& -A2- *&:4&-14 5F 2&F *&F'$'F5F D4@51('& -A5 +2&F? 46 4&5 ?4 12?A 2&F 'ED14$'F5&-(@4* F -A5 6-'415 ?D55F' C @41H A'? 1*'&0 ?' -4 A'? :2&F5?-'&5D14-5?-('-? F5?'G& @2? 4+$'4*? C -4 2664 1F 2 D 2*?'+ 5 D15-5J-(2- ?4E5 6*-*15 -'E5(641 152??51-B '&G A'? :2'E? -4 -A5 G4$51&E5&-(4& -A5 G14*&F -A2- A'? :4&:5??'4&? A2F +55& -A5 15?* - 46 641:5 *- -A5&(@AC &5*-12 'L5 -A5 4D512-'4& 46 -A'? +C -A5 F5: 212-'4&(?D4&-2&54*? C E2F5 '& A'? E2&'65?-4 -4 -A5 D54D 5(-A2- A'? 2+F':2-'4& @2? &4 4& C 2 6155(+*- E4?- F5 '+512-5 2&F D15E5F'-2-5F 2:- 0 5 @2? 5F -4 -A'? 2?- 2$4@2 (D14+2+ C(+C -A5 F5?'15 46 :4$51'&G 4$51 -A5 E41-'6':2-'4& 46 A'? F5652- 2 -A'& $21&'?A @A':A :4* F 'ED4?5 4& &4+4FC A5 @A4 5 D14:55F'&G? 215 46 ?4 2E+'G*4*? 2 :A212:-51 2? -4 ?*GG5?- -A5 '&5$'-2+ 5 '&6515&:5(-A2- -A5C 6 4@5F 614E A2+'-? 46 F'??'E* 2-'4& -44 ?-14&G -4 +5 :4&B -14 5F(5$5& @A5& -A515 @2? &4 4::2?'4& 641 '-? 5J.

I ?# + #' # &?$ # $0 > # 0 J #&$ # '" ?#+ * * +' ?# #+- /' ?#+' 0> 8$# $ # +0$# $ + 0> ? $ > #' / $ & /(- + $, (?# #-- # ' - 422 . ? $+ G # /$ ' ' ' %V - 42E & + + / /# $ /(&

51:'?5' 5' 4::2?'4&2 C' E55-' @'-A' 5J2ED 5?' 46' 2' ?'E' 21' 64&F&5??' 641' ?*D516 *4*?' E2&45*$1'&G' '&' -A5' A*E+ 51' :4&:51&?' 46'D1'$2-5' '65

6-51' -A5?5' 5$5&-?(' 4&5' E415' '&-51$'5@' -44H' D 2:5' /)* C' -A(7' +5-@55&' T'&G' 51F'&2&F' 2&F' A' 'D(' '&' @A':A' -A5' 6+11251' D15$2' 5F' 4&' A'?' ?4&.'&. 2@' -4' D2C' ?*:A' 2--5&-'4&' -4' F5:41*E(' 2&F' 5JA'+'-' ?*:A' 4*-@21F' E21H?' 46' 2' :41F'2' 15:4&:' '2-'4&(' 2?(' '6'-A5C' F'F' &4-' 2 -4G5-A51' 'ED4?5' 4&' -A5' D*+ ':(' E'GA-' 2-' 52?-' -A14@' 2' F5:5&-' $5' ' 4$51' -A5' :4E'&G' ?5D212-'4&' $5&' 2-' -A'?' 2?-' E55-'&G(' A4@5$51(' ?*:A' @2?' -A5' F'?-1*?-' 2&F' 2DD15A5&?'4&' 5&-51-2'&5F' 46' A'E(' -A2-' -A5' *&A2DDC' 62-A51' @2?' &4-' D51E'--5F' -4' ?55' 2&F' 5E+12:5' A'?' F2*GA-51' +56415' A'?' F5D21-*15 9

A14*GA4*-' -A5' @A4 5' 46'-A5?5' -1C'&G' ?:5&5?(' ?2C?' A'?' +'4G12DA51(' -A5' H'&G' E2'&-2'&5F' -A2-' D14D1'5-C' 2&F' 5&-'15' ?5 6.D4??5??'4&' @A':A' :4ED41-5F' @'-A' -A5' F'G&'-C' 46' A'?' ?-2-'4&' 2&F' :A212:-51(' 2&F' 26641F5F' 2' ?-1'H'&G' :4&-12?-' -4' -A5' :4&F*:-' 46' A'?' 5&5E'5?' 4@5$51' E*:A' A5' E2C' A2$5' +55&' -4*:A5F' @'-A' -A5' F5?51-'4&' 46' 2' D54D 5' @A4' A2F' 5&,4C5F' -A5' + 5??'&G?' 46'D52:5' 2&F' ?5:*1'-C' *&F51' A'?' G4$51&E5&-' 641' E415' -A2&' -A'1-C' C521?(' A5' E2&'65?-5F' &4' 4*-@21F' ?'G&' 46' F'?:4&-5&-' &' -A5' :4&-121C(' A5' -44H' 52$5' 46' -A5' 2??5E+ 5F' G12&F55?' @'-A' E2&C' 5JD15??'4&?' 46' 15G21F(' &4-':'&G' H'&F C' -A5'1' D2?-' ?51$':5?' -4' A'E(' 2&F' ?-*FCB '&G' -4' 52$5' ?*:A' 2&' 'ED15??'4&' 2?' ?A4* F' 5662:5' -A5

I' 9 #$' +' '#' #0' '##' &# ' * ' B(A' ' $ > ' &$-' H' A' $#$ $' +' ##' #0' - ' -# ' -' &&J JJ'### &$-' JJ# A '$ ' 8 + =

= 8 ' ' 6 ' 8

15:4 5:-'4&' 46'15:5&-' F'6615&:5?9' A5' :'1:*E?D5:-' E4&21:A' 44H5F'641@21F(' &4' F4*+-(' -4' -A5' F2C' 46'A'?' 15-*1&' A5' 5$5&-' F'F' &4-' ?55E' $51C' 'ED14+2+ 5N' 2&F' -A515' @515' 4-A51' ?2G2:'4*?' D51?4&?' +5?'F5?' A'EB ?5 6(' @A4' 152F(' '&' -A5' F21H' ?'G&?' 46' -A5' -'E5?(' 2+*&B F2&-' 2*G*1C' 46'?4E5' ?D55FC' 15$4 *-'4& 6'9

I' 9 # $' $ ' + ' '#' #0' N'#' &$-' ' A' ; # & $" $ ' / ' '# / ' ' $ ' 2' , # &' 3' /#$ ' 5

' 9 # $' + ' '#' #0' '#' &$-' '$ ' ? ' + $ &? >' '$L #&# $ # ' *' $ > ' -'&&&J#.' G? ' + ' ' &? '0$&D' ? ' L #+ ' *' ?#' * # / ' /# $ $ /' $ $' $?' - # &#-$' $? # # ' * ' ? ' ' ' # ' ?#' &?$- ' $' ? ' $/ ' +$>' +$ D' $ ' $ >'$ /'9 # $' ? '* + ' ' + >'$ - & $ '0 '$& ' # ' ? + ' ?$/' #+/ 0 / >' ? I' + ' # #+$ ' -- # # ' *' 0 '$ # ' 6 ' + ' '?$' ' 0 ' **#&# >' #+-$ #$' ' $ /' - +-' ' / '! #& ' 'G?$' G$' $ >'" /' # ' ?# #-(' &?$L $& '$? "?' ?$' *'?#' >$' +$ 'G$' *' & '&$ & $ /' '#+- ' ? '/ - ' - &' ' $' - ' *' $ > (' & + + ' - $ # ' $ /' $"$&# >' ? ' $" ' &? #& ' ? G ' ' ? "?' + ' /' '$ + G?$' * ? '/# $ &'$' ' #+ 'G$' * +' ?$'&# & + $ &'- $& /' # ' $' - # ' *'# G' + '*$' $0 ' * ' +0 $&# '" ? 'G? '*# /' *' $& # ' ?$ '#*' ? '?$/' $D '-$ ' $ /'! /' # ' ? '& G/' $ '

*'# ' 6 '?$ '$&& /# " >'"#' ' + &?'G#/ ' & - ' '?# ' ' >' J?#0# # '" * ' / $# ' *' ? ' $ " /' "## '$ & ' - # ' $ /'- #&>' *' ? ' -- # =-$ >'($ /'$? "?'& / + # '" ? +' ?#+ *'G# ? ' ' '?$ '& L ' > /' #+- # ' *' /# $ /(' & / &' '*$' $0 ' ' ? ' G? ' ?$ ' $ > ' # ? ' ? ' $" ' ?# #$ ' ' $ > ' ' $ >' & + - $ >' =G # ' $ #' ' ' * #" 'G? +' '?$' '& / ' & $ & ' ? ' J + >' L *$' $0 ' - $#' G?#&?' ' 0 ' ?$' "#' ' *' /#L $ /' # ' ?#' $ $& # ' G# ?' ?# #-' '#' /#**#& ' '$&& ' * ' ? '0#$ 'G?#&?' ?#' +# ' ?# #$ (+# /' ?$' & #' /' # ' 0 ' ?$' ? ' ?$ $D ' ?# ' #+- # '* +' ? ' - - $' # ' $# /' *' ? '&?$ $& ' *' ? ' -$ # ' $? ' ?$ ' * +' ? ' &# & +L $ & ' *' ? '-$ #& $'&$ ' L / ' '# G'($' + / ' *' - & /L # '" J + >' 0! & # $0 ' # ' ? ' - '# $ & 'G? ' ?#L #- ' ? G ' ' " /' ?#' $ $' , $ # # ' G$' 0='# >'$' + ' '# ' ? '?$ / ' *' & -'$ /' $ * ' + ' G D# '" J& #' >' * ' ? # ' G ' *# ?' - -

Z

A 6 A 6 6

< => <

-A5 5$5&-? @515 D2??'&G @A':A 4::*DC -A5 +5G'&&'&G46-A5D15:5F'&G:A2D-51(A1'?-4DA51 4 *EB +*?15-*1&5F614E'A'?64*1-A 2&F 2?-$4C2G5 -A2F +55& 4&5 *&+14H5& ?51'5? 46 F'?2DD4'&-E5&-2&F F'?B 2?-51 6-51 M*'--'&G '?D2&'4 2(2&F+5'&G F1'$5& +C ?-41E? &521 C -4 -A5 '? 2&F 46 *+2(A5 -12$51?5F -A5 G* 6 46 4&F*12?(2&F :42?-5F 2 4&G -A5 E21G'& 6 -A5 G4 F5& 15G'4& @A':A A2F ?4 4&G 6 '--5F +56415 A'? 62&:C A5 &2-'$5? '&$'-5F A'E -4?-1'H5 '&-4 '-? @5?-B 51& F5D-A? '& $2'&(2&F A5 D15??5F 641@21F -4 -A5 ?4*-A(&4@?4 5 C 4::*D'5F @'-A -A5 G12&F 4+,5:-46 F'?B :4$51'&G 2 D2??2G5 '&-4 -A5 &F'2& 4:52& -5&G-A(26-51 A2$'&G @'-A G152- F'66':* -C 2F$2&:5F ?4E5@A2- +5C4&F -A5 D4'&- 46 4E+15 F5 '4?(A5 @2? :4EB D5 5F +C -A5 6*1C 46 -A5 5 5E5&-? 2&F -A5 E*1E*1? 46 A'? E5& -4 2+2&F4& -A5 5&-51D1'?5(2&F 15-12:5 A'? ?-5D? 5 @2? ?*+?5M*5&- C F5652-5F '& 2& 2--5ED- -49 5?-2+ '?A 2:4 4&C 4& 5112 '1E2 +C -A5 6514:'-C 46 -A5 &2-'$5?N @2? @15:H5F 4& -A5 '? 2&F 46)2.

M: H

22':2(' @A515' A5'@2?' D51E'--5F'-4' '&G51' E415' -A2&'
2'C521(' -A14*GA' -A5' E2':5' 46' $2&F4(' -A5' &5@'G4B
$51&41' 46' -' 4E'&G4'N' 2&F' 6'&2 C(' A2$'&G' 155EB
+21H5F'@'-A'A'?' ?A2--515F':15@'&' 2'$5??5'615'GA-5F'
2-'A'?' 4@&' 5JD5&?5(' @2?' F1'$5&' +C' 2' ?*::5??'4&' 46'
-511'+ 5' -5ED5?-?' 2:14??' -A5'4:52&(' *&-'(' 4&'-A5' -A'
46' 4$5E+51' < =(' A5' 2&:A415F' '&' -A5' '-- 5' D41-'
46' -' *:21(' -@5 $5' 52G*5?'614E' 5$' 5 9

&'-A'?' M*'5-'A2$5&(' 4 *E+*?' A4D5F' -4'6'&F' -A5'
15D4?5'A'?' +14H5&':4&?-'-*-'4&' 2&F' @4*&F5F'?D'1'-'?4'
E*:A' &55F5F(' 2&F' -4' 4+-2'&' 2' ?D55FC' 15?-'-*-'4&' 46'
A'?' A4&4*1?' 2&F' 5E4 *E5&-?' 614E' -A5' A2&F' 46' ?2B
+5 2' *-'A515' A5' @2?' -4' 5JD51'5&:5' A'?' +'--515?-'
F'?2DD4'&-E5&-' -' -A5' -'E5' 46' A'?' 211'$2(' -A5'
M*55&' @2?' 4&' A51' F52-A+5FN' 2&F' '&' 2' $51C' 65@' F2C?'
4 *E+*?' 15:5'$5F' -A5' 266':-'&G' '&-5 'G5&:5(' -A2-'
-A5' 61'5&F(' 4&' @A4?5' ?-52FC' ?*DD41-'A5' A2F' ?4':4&6'B
F5&-C' 15 '5F(' @2?' &4' E415' -' @2?' 2' F55D' + 4@' -4'
A'?' A4D5?(' 641' R A5' A2F' 2 @2C?' 5JD51'5&:5F' 62$4*1'
2&F' D14-5:-'4&' 614E' A51(K' ?2C?' A'?' ?4&' 51F'&2&FN
R @A' 5' -A5' H'&G' A2F' &4-' 4& C' +55&' '&F'66515&-(' +*-

I' ' $ > ' ' 0' & $ ' *' / K' $ /' $ '0 ?' L
' ' 0 ' &'## ' #0'#' ==' "$" /'# '# <' $ /' $0 ' ' $ ' ?'
K #' ' ' 0' 6# ' $/+# $C' G ' ' ?' L
#0'#' &$-'J#' A $ /' L ' #" ' * +' P$+$#&$' ? >'
' 6# ' / ' +# $ ' &' $ ' $ ' & & /' # ' ?' *# '
JJJ'###A&'### A 6 $' 6# ' ' + ' *' $'$ ' &'&# .'
/' $' /' &&#/' &'#' #0' ' 7?$ ' '& /'+$>'0' ? G '
&' ##A J## <' #0' '#'&' #A J### A' ' ' ?' $ >' -$ ' *' +L
$'$ ' :#$" ' >' & 0' 0 C' &$ ' ? ' #' $0 /$ '
+'#' --'F3FA #"?' ' ' >' -' *'?#'-$?'
?' 0 ' $? ## ' * ' ?' $* ' ?' & ++ & + ' *'?#'
* ?' ' >$" ' $ ' ?' $# 1" $' -#

D4?'-'$5 C *&61'5&F C -4 A'? '&-515?-? K U 5 E 2C 152F' C :15F'-(-A2- 2 E 2& 46 -A5 :4 F 2&F D1*F5&- :A212:-51 46 -A5 D2&'?A E4&21:A @4* F &4- +5 $51C 'H5 C -4 :4ED15A5&F 4&5 ?4 21F5&- 2&F 2?D'1'&G 2? -A2- 46 4 * E + * ?(&41 -4 E2H5 2 4@2&:5 641 A'? 5JB -12$2G2&- ?2 '5? &F '6 &4-A'&G A2? A'-A51-4 E 5- 4*1 5C5 -4 @2112&- -A5 ?-14&G 2&G*2G5 46 -A5 ?4&(C5- @5 A2$5 ?55& -A2- -A5 H'&G(614E -A5 6'1?-(F'?B -1*?-5F -A5 2FE'12 0? D14,5:-?(2? A2$'&G ?4E5-A'&G *&?4*&F 2&F :A'E51':2 '& -A5E

A5 266 ':-'4& 46 -A5 2--51 2- -A5 -'F'&G? 46 ?2B +5 20? F52-A '? ?-14&G C F5D':-5F '& 2 5--51 @1'--5& 'E E5F'2-5 C 26-51 -4 A'? ?4& '5G4 R -''? 4*1 :A'56 F*-C(K A5 ?2C?(R -4 :4E E5&F -4 4F E4?- 2665:B -'4&2-5 C 2&F F5$4*- C -A5 ?4* 46 4*1 F5:52?5F 2FC -A5 M*55& 51 '65 @2? 2 @2C? 2-A4 ':2&F $'1-*B 4*?(2&F D14ED- -4 @A2-5$51 :4* F 15F4*&F -4 A'? A4 C ?51$':5 @A5156415 @5 E2C -1*?- ?A5 &4@ 15?- '& G 41C(621 614E 2 :4&:51& 641 -A'? 14*GA 2&F @521C @41 F K 6

4 * E + * ?(2- -A'? -'E5(@2? ?4 E * :A :1'DD 5F +C -A5 G4*-(-4 @A':A A5 A2F +55& 4&G ?*+,5:-(-A2- A5 2? *&2+ 5 -4 *&F51-2H5 2,4*1&5C -4 5G4$'2(@A515 -A5 :4*1- @2?(F*1'&G -A5 '&: 5E5&:C 46 -A5 @'&-51 5 4?- &4 -'E5(A4@5$51('& 2C'&G A'? ?'-*2-'4& +5B 6415 -A5 H'&G(-A14*GA A'? ?4& '5G4(@A4 @2? 2-B -2:A5F -4 -A5 14C2 A4*?5A4 F 5 *1G5F A'? D2?-

9 '?-(F5 E'12&-5(:2D c 21-2? F5 44&(2D 2. :$''' $2115-5(-4E ''D. =<

H F

S

?51$':5?(-A5' 4-'G'&2 ' -5112?' 46' - '5' :2D'-* 2-'4&' "E2F5'
@'-A' A'E(-A5'1' '&61'&G5E5&-' '&' 2 E4?-' 5$51C' D21-'B
:* 21(2&F' A'?' 4@&' &5:5??'-4*?' :4&F'-'4&' *-' 51.'
F'&2&F' @2?' -44' +*?' C' 4::*D'5F' @'-A' A'?' 4@&' :4&B
:51&?(2-' -A'?' :1'?'?(-4' G'$5' E*:A' A55F' -4' -A4?5' 46'
4 * E+*?(@A4' 15D52-5F C' :4ED 2'&?' 46' -A5' '&2--5&B
-'4&' ?A4@&' -4' A'?' 2DD ':2-'4& 9' -' 5&G-A(4&' -A5'
2DD142:A' 46' 2' E' F51' ?52?4&(-A5' 2FE'12 (A2$'&G' 4+B
-2'&5F' 2' F'?D5&?2-'4&' '&' A'?' 62$4*1' 614E' -A5' 41F'B
&2&:5' D14A'+'-'&G' -A5' *?5' 46' E* 5?(@2?' 2+ 5' +C' 52?C'
,4*1&5C?' -4' 152:A' 5G4$'2(2C' < (2&F' D15?5&-'
A'E?5 6'+56415' -A5' E4&21:A 6

5' @2?' 15:5'$5F' @'-A' 2 ' -A5' 4*-@21F' E21H?' 46'
:4*1-5?C' 2&F' 15G21F' +C' 51F'&2&F(@A4' 2??*15F(A'E'
-A2-' R' A5'6* C' 5?-'E2-5F' A'?' 'ED41-2&-' ?51$':5?U' 2&F(
621' 614E' ?-'&-'&G' A'?' 15:4ED5&?5' -4' -A5' D15:'?5' -5112?'
46' -A5' :2D'-* 2-'4&('&-5&F5F' -4' :4&651' E415' 2ED 5'
62$4*1?' 4&' A'E' '&' 2?-' 5 K' W

A5?5' 62'1' @41F?(A4@5$51(@515' &4-' ?5:4&F5F' +C'
2:-'4&?' A5' H'&G' D14+2+ C' A2F' &4' ?51'4*?' -A4*GA-?'
46' 15'&?-2-'&G' -A5' 2FE'12 ' '&' A'?' G4$51&E5&-' '?'
?*::5??41($2&F4(@2?' A'GA' '&' -A5' 14C2 ' 62$4*1.'
'?' 1* 5(A4@5$51' 4+,5:-'4&2+ 5' 2?' 15G21F?' -A5' &B
F'2&?(@2?' 5$51C' @2C' 2::5D-2+ 5' -4' -A5' D2&'?A' :4.

1' ' ?#' # # '" & L &&#/ $' &'#' #0' '#' &$-'
- / &' G# ?' ?#' ' # " < J#' A 6# ' / ' +# $ '&$-'
G' - # /'* ' ? '*# ' #+ '0>' &'##
%M ' $'$ '* +' ?' #"#L %M ' $' $&& ' *' ?#' /#L
$' ' #' ? ' D' *: =' $ & ' '' '##'-' (45' '* '
$" $% ' - # ' :#$" ' >' *' ?#' 6# >
& 0 ' +'#' □' """' ' ,' 6 $' 6# ' / ' $' /'
' 6 $' 6# ' / ' $' / &'#' #0' '#' &$-' J#'

4&'?-?N 9 2&F 5$5&' A'? 4DD15??'4&' 46'-A5' D441' &2-'$5? @2? ?4'621'62$4*12+ 5'-4' A'? :2*?5(-A2-'-' 5&2+ 5F'A'E' -4' D4*1' E*:A' 21G51'?*E?'&-4'-A5' 14C2 :46651?'-A2&' A2F' +55&' G 52&5F' +C' A'? E415' A*E2&5',D15F5:5??41 0,"

A5' 5$5&-?' 46' -A5' 2?-' $4C2G5(' E4154$51(' A2F' D14+2+ C' &4-' -5&F5F' -4' F'?D5 2&C' F'?-1*?-(" @A':A' -A5' H'&G' D15$'4*? C' 5&-51-2'&5F' 46'-A5' 2FE'12 0?' :2D2:'-C' 641' G4$51&E5&- '?' E5&' A2F' +55&' '&' 2' ?-2-5' 46' D51D5-*2 '&?*+41F'&2-'4&' N @A' 5' A'?' 5--51' -4' -A5' ?4$515'G&?(' @1'--5&' *&F51' F'?-15??'&G' :'1:*E?-2&:5?(' '&F55F(' 614E(')2E2':2(' 5JA'+'-5F' ?*:A' 2' F55D' :4 4*1B '&G' 46' F5?D4&F5&:C(' 2&F' 4::2?'4&2 C' ?*:A' @' F' 2&F' $'?'4&21C' D14,5:-?(' 2?' E'GA-' 2 E4?-' ?*GG5?-' -A5' ?*?B D':'4&' 46' 2' -5ED'+121C' 2 '5&2-'4&' 46' E'&F ,N

*-' @A2-5$51' 152?4&?' E2C' A2$5' 4D512-5F' -4' D4?-B D4&5' 4*E+*?0?' 15?-412-'4&' -4' D4@51(' '-' @2?' -A5' G14??5?-' '&,*?-':5' -4' @'-AA4 F' 614E' A'E' -A5' 15$5&*5?' ?5:*15F' +C' -A5' 41'G'&2' :4&-12:-' @'-A' -A5' :14@&' ::41F'&G' -4' A'?' 4@&' ?-2-5E5&-(' A5' @2?' ?4' 621' 614E' 15:5'$'&G' A'?' ?A215' 46'-A5' 15E'--2&:5?' E2F5' +C' $2&.' F4(' -A2-' A5' @2?' 4+ 'G5F' -4' +4114@' E4&5C(' 2&F' A2F

I' 6 $' 6# ' /' $' /' 1 &#/' &'#' #0' ''&'J## X' 0#/' &'#' #0' ''&$-' J## <' #0' '#' &' J'#A MJ'### A' 8$ #0$>' +' ##' #0' J#J' &' J#'

P' ?#' /&+ ' J?#0# ' $' + / >'#'G?#&?' 0 ' $ $#'' $ /' /' $ # "'$ ' $ " L >' 0 / /' G# ?' & $K>' / $+ ' / * ' $+ $# ' $ /' G# /' &? + ' * ' ? ' & ' >' *' P L

$ +' ?' & ' # ' *' ?' 8 $ /' Q?$ ' Y&' :$"$ # ' #D' ? ' G?#&?' & + ' &&$L # $ >' #D' & /' ' '?# ' ' ? ' ? ' #"?' *' $ ' &$ ' *$#' ' *# ' ? ' +# /' *' ?' $/ ' $' ? >' / 0 ' /#/' ? ' *' ?' ' #" ' $' ?' #+ ' G# ?' +# " /' #+ ' *'G / '$ /'& +-$ # ' ' $ $' / ' ' $-' #0 $'$ ' + '#' - ' F5B

2:-*2 C '&:*115F 2 A52$C F5+- 641 A'? &5:5??21C 5J
D5&?5? 9 A5 -1*-A @2?(-A2- 2? -A5 15?4*1:5? 46
-A5 &5@ :4*&-1'5? +5G2& -4 F5$5 4D5 -A5E?5 $5? E415
+*&F2&- C(51F'&2&F 65 - G152-51 15 *:-2&:5 -4 :4E
D C @'-A -A5 5--51 946 -A5 41'G'&2 :2D'-* 2-'4&M A5
&4@ :4&?'F515F -A5 :4ED5&?2-'4& 2? -44 $2?-(2&F
2 -4G5-A51 F'?D14D41-'4&5F -4 -A5 ?51$':5? 46 2&C ?*+
,5:- M 2&F 2- 5&G-A @2? ?4 *&G5&514*? 2? -4 D14D4?5
-A2- -A5 2FE'12 ?A4* F 15 '&M*'?A A'? : 2'E?('&:4&
?'F512-'4& 46 4-A51 5?-2-5? 2&F F'G&'-'5? -4 +5 2??'G&5F
A'E '& 2?-' 5 6 - 21G*5F 5?? H&4@ 5FG5 46 :A2
12:-51 -A2& -A5 H'&G *?*2 C ?A4@5F(-A2- A5 ?A4* F
A2$5 -A4*GA- -A5 E2&(@A4 A2F +14H5& 466 2 &5
G4-'2-'4&? 4& -A5 -A15?A4 F 46 2 F*+'4*? 5&-51D1'?5(
12-A51 -A2& 2+2-5 4&5 -'-- 5 46 A'? F5E2&F?(@4* F
:4&?5&- -4 ?*:A 2+2-5E5&- @A5& -A5 ?*::5?? 46 -A2-
5&-51D1'?5 @2? ?4 G 41'4*? C 5?-2+ '?A5F

A2- 2??'?-2&:5 4 *E+*? 2:-*2 C 15:5'$5F 614E
-A5 :14@& 2- -A'? -'E5(41 @A5-A51 A5 15:5'$5F 2&C(
F45? &4- 2DD521 5 :4&-'&*5F -4 15?'F5 @'-A -A5
:4*1-(2&F 2::4ED2&'5F '- '& '-? 15E4$2 -4 2 2F4
'F 5 &4 F4*+- 5&,4C5F -A5 D*+ ':4&?'F512-'4&
F*5 -4 A'? A'GA 15D*-5 2&F 5J-1241F'&21C 2:A'5$5
E5&-? M -A4*GA +C -A5 E4&21:A A5 E'GA- +5 15G21F
5F '& -A5 *&@5 :4E5 'GA- 46 2 :15F'-41(@A4?5 : 2'E?
@515 -44 ,*?- -4 +5 F'?2$4@5F(2&F -44 21G5 -4 +5
?2-'?6'5F

k 21-5? F5 44&(2D 2. E'12&-5(:2D :$''' > 511512(
$2115-5(-4E ' D S S '?- &F ::'F5&-2('+ $' :
C 51& 44&('?-(F5 . H :

'-A' ?D'1'-?' +14H5&' +C' -A'?' *&-A2&H6* ' 15M*'-2 ' 46' A'?' ?51$':5?(2&F' @'-A' 2' :4&?-'-*-'4&' 'ED2'15F' +C' 2' '65' 46' *&E'-'G2-5F' A21F?A'D(4 *E+**?0?' A52 -A' &4@' 12D'F C' ?*&H' *&F51' -A5' ?5$515' 2&F' 15'-512-5F' 2--2:H?' 46' A'?' F'?41F51 ' &' -A5' 211'$2 ' 46' A' 'D' 2&F')4B 2&&2(A5' 2FF15??5F' 2' 5--51' -4' -A5E(-A14*GA' A'?' +14B -A51' 21-A4 4E5@('&' @A':A' A5' 2E5&-5F' -A5' '&B 6'1E'-'5?' @A':A' D15$5&-5F' A'E' 614E' D2C'&G' A'?' 15B ?D5:-?' '&' D51?4&(2&F' E2F5' 2' -5&F51' 46' A'?' 6*-*15' ?51$':5?' A5' :4EE*&':2-'4&' @2?' G12:'4*? C' 15B :5'$5F(+*-' 4 *E+*?' F'F' &4-' ?*1$'$5' -4' +5A4 F' -A5' C4*&G' ?4$515'G&? 9

'?' E5&-2 ' $'G4*1(A4@5$51(@2?' &4-' 'ED2'15F' +C' -A5' 12$2G5?' 46' F'?52?5(2&F(4&' -A5' < -A' 46' 2C' < (A5' 5J5:*-5F' 2' :4F':' (:4&6'1E'&G' :51-2'&' -5?B -2E5&-21C' F'?D4?'-'4&?.' 641E51 C' E2F5(@'-A' ?D5:'2 ' 156515&:5' -4' -A5' 5&-2' ' 46' A'?' 5?-2-5?' 2&F' F'G&'-'5?M E2&'65?-'&G('&' A'?' 2-5?-' 2:-(-A5' ?2E5' ?4 ':'-*F5' A5' A2F' ?A4@&' -A14*GA' '65' -4' D51D5-*2-5' 2&' A4&4*12+ 5' &2E5 ' 2$'&G' :4ED 5-5F' -A5?5' 2112&G5E5&-?' @'-A' D5165:-' :4ED4?*15(A5' 5JD'15F' 4&' -A5' 64 4@'&G' F2C(2C' ; -A(< (+5'&G' -A2-' 46' 4*1' 41F0?' 2?:5&?'4&(@'-A' '-- 5' 2DD215&-' ?*6651'&G(2&F' '&' -A5' E4?-' A1'?B -'2&' ?D'1'-' 46'15?'G&2-'4& -' '?' 15E2'&?(6'1?-' F5D4B ?'-5F' '&' -A5' :4&$5&-' 46' -' 12&:'?' 2-' 2 2F4 'F(@515(?'J' C521?' 2-51(15E4$5F' -4' -A5' 21-A*?'2&' E4&2?-51C' 46' 2?' *5$2?' 2-' 5$' 5(@A515' 2' :4?- C

1' $'$ ' ?$' "#' ' ?' -' (F5 A 6# ' / ' +# $ ' ' :#$" ' >' &' +'###' &$-' &'#'A' +$ / K' 6# ' -'@4E A 6 $' 0# - $# ' &$-' &JJJ#'A' $'$ ' '9 #"$' $ ' / ' '# $ +'##' &' #-'2@3

E 4& * E 5&-' @2?' 12'?5F' 4$51' -A5 E' +C' T '&G' 51F'&2&F?'
@'-A' -A5' E5E412+ 5' '&?:1'D-'4&(

' 2?-' 2C' 2' 54&
5$4 E&F4 F ' 4 4&N

-A5' 'H5' 46'@A':A(K' ?2C?' A'?' ?4&' 51F'&2&F(' @'-A'
2?' E * :A' -1*-A' 2?' ?'E D ':'-C(' R'@2?' &5$51' 15:41F5F' 46'
2&C' E 2&' '&' 2&:'5&-' 41' E4F51&' -'E 5?(K' ' 14 E' -A'?'
?D4-' A'?' +4FC' @2?' -12&?D41-5F(' '&' -A5' C521' < (' -4'
-A5' '? 2&F' 46' - ' 4 E '&G4(' -A5' D14D51' -A52-15' 46'A'?'
F'?:4$51'5?N 2&F(' 4&' -A5' :5??'4&' 46'-A2-' '? 2&F' -4' -A5'
15&:A(' '&' < (' @2?' 2G2'&' 15E4$5F' -4' * +2(' @A515'
A'?' 2?A5?' &4@' M*'5- C' 15D4?5' '&' -A5' :2-A5F12 ' :A*1:A'
46' '-?' :2D'-2 6

A515' '?' :4&?'F512+ 5' *&:51-2'&-C' 2?' -4' 4 * E + * ?0?'
2G5(' -A4*GA' '-' ?55E?' D14+2+ 5' '-' @2?' &4-' 621' 614 E'
?5$5&-C' 2-' -A5' -'E 5' 46' A'?' F52-A)' '?' D51?4&' A2?

I' 6# ' / ' +# $ ' 0# ' ? ' * ' *' *' ? ' " $ /' $ $' -
? ' * G# '" "# +' *' ?# ' $ >' /#*#& ' # ' $' 0 '
$ ' 8# '# '# '$ - $ # '" #0 ' *' +0 ' - $& /' # ' $' #&? '
' ? ' / ' *' ?' " $ ' $L # ' ? ' / ' $ ' # ' $' # ' ' ? G$ ' $ /' $ ' # ' $' # ' '
'#"$ ' ? G# '" ? ' ?#"?' #L '& $# ' *' ? '# # ' ' >$" '
+$ # ' # ' G?#&?' ? ' G$ ' ? /' ' 00 (' ' * +' 0$ '
$0 $/' $ ' G ' $ ' $ ' ? + ' 0>' $ G D' *' + &?' # ' $ /' # L
? ' #"? /' *' ?# ' G ' /$>' * +$ # ' G# ?' ? ' , # # '
R' & + -$ $0# # ' #" #0 ' ? L $ G$ & ' * ' ? ' # $&& $&# ' *'
' J#+# +' $# ' / & ' ' $' - ? + ' - 0 #&$ #
- * "#/ +' ! 0$ ' & ' ' # ? ' '$ # ' ? # ' L
$ & ' , /' - # & +' ? = - & # '" ? ' /$ ' *' +0 (' '
+ ' 6 & # ' ' #0 # -$ # ' 0# ?' & ' ' $' $ " ' *' G >'
*$+$+' 0 & $ ' ; +' > $ ' * +' 2(4B' ' 2(@B' ? '
+ + #$+' " $ $' #+' + $ # $ ' $ ' />' 0! & # ' ' # ? ' *'
+# ' # $ +' + + # ' ? ' ?>- ? ($ /' ? ' ?# =
& ' & & M R' "# + ' #$ RG# ' *# /' # ' $ # ' ' & ' ? '
#0 ' #' ' - ' 2F4 D ' ?$ ' ' $' '# ' * ' $L
' $'$ ' :#$" ' >' = '$ ' + '#' ' &' #' A d
& 0 ' + ' ## ' &' #- ' 2)) K' 6# ' / ' ' ' /

6 ' 6 ' <

+55&(E '&*-5 C' F5?:1'+5F' +C' 9A'?' ?4&' 5' @2?' -2 '
2&F' @5 ' E2F5(' A'?' A52F' 21G5(' @'-A' 2&' 2M*' '&5' &4?5('
?E2 ' 'GA-' + *5' 41' G15C'?A' 5C5?(' 2'615?A' :4ED 5J'4&'
2&F' 15F' A2'1(' -A4*GA' '&:5??2&-' -4' ' 2&F' 5JD4?*15' A2F'
+14&L5F' -A5' 641E51(' 2&F' + 52:A5F' -A5' 2--51(' +56415'
-A5' 2G5' 46'-A'1-C ' 5' A2F' 2' E2,5?-':' D15?5&:5(' @'-A'
E*:A' F'G&'-C(' 2&F' 2-' -A5' ?2E5' -'E5' 2662+' '-C' 46'
E2&&51 ' 5' @2?'6 *5&-(' 5$5&' 5 4M*5&-' '&' F'?:4*1?5N'
G5&512 C' -5ED512-5(' -A4*GA' ?4E5-'E5?' A*11'5F' +C' 2'
-44' '$5 C' ?5&?'+' '-C' '&-4' 2' ?2 C' 46' D2??'4& 9' 5'
@2?' 2+?-5E'4*?' '&' A'?' F'5-(' '&F* G5F' '-- 5' '&' 2E*?5B
E5&-?' 46' 2&C' H'&F(' 2&F(' '&' -1*-A(' ?55E5F' -44' E*:A.'
2+?41+5F' +C' -A5' G152-' :2*?5' -4' @A':A' A5' A2F' :4&?5B
:12-5F' A'?' '65(' -4' 2 4@' ?:4D5' 641' -A5' 4@51' D*1?*'-?'
2&F' D 52?*15?' @A':A' 5&G2G5' 41F'&21C' E5&' &F55F('
A'?' 'E2G'&2-'4&(' +C' 655F'&G' -44' 5J: *?'$5 C' 4&' -A'?'
46-C' -A5E5(' 2:M*'15F' 2&' *&&2-*12 ' 5J2 -2-'4&(' @A':A'
12'?5F' A'E' -44' E*:A' 2+4$5' -A5' ?4+51' 152 '-'5?' 46'5JB
'?-5&:5(' 52F'&G' A'E' -4' ?D*1&'(2-'F'66':* -'5?' @A':A' '&'
-A5' 5&F' D14$5F' '&?*1E4*&-2+ 5(' 2&F'",-4' :4 4*1' -A5'
6*-*15' @'-A' -A4?5' 12'&+4@' -'&-?' @A':A' -44' 46-5&'
E5 -5F' '&-4' 2'1'

A'?' 5J2 -5F' ?-2-5' 46' -A5' 'E2G'&2-'4&' @2?' -A5' 15B
?* -' '&' D21-(' A4' F4*+-(' 46' -A5' D5:* '21' :'1:*E?-2&:5?'
46' A'?' '65N' 641' -A5' G41'4*?' 5&-51D1'?5' A5' A2F'
2:A'5$5F' 2 E4?-' ,*?-'6'5F' -A5' :4&$':-'4&' 46'A'?' 2:-'&G'
!&F51' -A5' '&6 *5&:5' 46'?4E5' A'GA51' '&?D'12-'4&' -A2&

#0' ##' &' J## A - + ' =' I' 6# ' / ' +# $ ' &$-'
' *' ' $ ' --' 2F F@ A' ### A ' ' 0' 6# ' #0' #'
'# "' #*' *' +0 ' ' '#' ' &'J#' A 6 $' /#$' &&#/'
&' J'###' &?'#' ' &'#' #0' '#' &$-' J'

) .

E 515 A * E 2& 152?4&(2&F 5F A'? F5$4 * - E '&F -4 F'?B :51& '&-' E 2-'4&? 15?D5 : -'&G A' E ?5 6 '& -A5 F21H 2&F EC?-51'4 * ? 2&&*&: '2-'4&? 4 6 ?2 : 15F D14DA5 : C 9

A2- -A5 14 E 2&-' : 4 4 * 1'&G 4 6 A'? E '&F(A4@5$51(@2? &2- * 12 -4 A' E (2&F &4- D * 15 C -A5 G14@-A 4 6 : '1: * E ?-2&: 5?('? 5$'F5&- 614 E -A5 : A' E 51' : 2 ?D5 : *B 2-'4&? '& @A' : A A5 ?51'4 * ? C '&F * G5F +56415 -A5 2 : : 4 E D '?A E 5&- 4 6 A'? G152- F'? : 4$51'5? '? ? : A5 E 5 4 6 2 : 1 * ?2F5 641 -A5 15 : 4$51C 4 6 -A5 A4 C ?5D * : A15 @2? E 4?- F5 '+512-5 C E 5F'-2-5F(2&F ?-15&*4*? C 2$4@5F 614 E -A5 $51C 6'1?- F2-5 4 6 A'? D14D4?2 ? -4 -A5 D2&'?A G4$51& E 5&- ' '? 5&-A*?'2?-' : 4 E E *B &' : 2-'4&? 4& -A5 ?*+,5 : - E *?- A2$5 D14$4H5F 2 ? E ' 5 614 E 2 D4&-'66 'H5 5J2&F51 N 6 2&F E 2C ?*GB G5?- ?4 E 5 2D4 4GC 641 -A5 -21F'&5?? @'-A @A' : A A'? E 415 12-'4&2 D14,5 : -? @515 2 : : 15F'-5F +C -A5 2?-'B '2& G4$51& E 5&- ' * - -A5?5 $'?'4&21C 62& : '5? &5$51 : 4 * F5F A'? , * FG E 5&- '& E 2--51? 15 2-'&G -4 A'? G152- *&F51-2H'&G(2&F '- '? : *1'4*? -4 4+?51$5 -A5 D14B DA5-' : 2 : : *12 : C @'-A @A' : A A5 F'? : 51&5F(&4- 4& C -A5 5J'?-5& : 5(+ * - -A5 5$5&-*2 15?4*1:5? 46 -A5 5?-51& 41 F N 2? '? ?*66' : '5&- C 5$'& : 5F + C A'? D15B : 2*-'4&?(-4 -A5 $51C 2?-(-4 ?5 : *15 -A5 6 * 61*'-? 46 -A5 E (*&'E D2'15F(-4 A'? D4?-51'-C

A2-5$51 @515 -A5 F565 : -? 46 A'? E 5&-2 : 4&?-'-*B -'4&(-A5 6'&G51 46 -A5 A'?-41'2& @' 6'&F '- F'66' : * - -4

I ? J $& * + = * ?# - # ? + +? C 0 D * - -? &# $- *# ? $ / $ * ? &= $'$ + ## & # - & * # $'$ = 2(E . $ # J# # '" # ? : #$" + ## & # - #0 # ? &$ +?# $ $ = 2(@ '#

D4'&- -4 2 ?'&G 5 + 5E'?A '& A'? E412 :A212:-51
'?0:4115?D4&F5&:5+152-A5?-A5?5&-'E5&-46F5$4-5F
4C2 -C -4 A'? ?4$515'G&? '? :4&F*:- A2+'-*2 C
F'?D 2C5F -A5 *-E4?- ?4 ':'-*F5 641 -A5 '&-515?-? 46
A'? 64 4@51? 5 5JD5&F5F 2 E4?- A'? 2?- E212.
$5F" '& 15?-41'&G A'? *&641-*&2-5 :15@ -4 -A5'1 &2-'$5
2&F '? F52 '&G? @515 15G* 2-5F +C -A5 &':5?-
D1'&:'D 5? 46 A4&4*1 2&F,*?-':5 '? 2?- :4EE*&'B
:2-'4& -4 -A5 ?4$515'G&? 614E -A5 &F'5? 15E4&?-12-5?
2G2'&?- -A5 *?5 46 $'4 5&- E52?*15? '& 41F51 -4 5JB
-12:- G4 F 614E -A5 &2-'$5?(2? 2 -A'&G 5M*2 C ?:2&B
F2 4*? 2&F 'ED4 '-': 9 A5 G12&F 4+,5:- -4 @A':A
A5 F5F':2-5F A'E?5 6 ?55E5F -4 5JD2&F A'? @A4 5
?4* (2&F 12'?5F '- 2+4$5 -A5 D5--C ?A'6-? 2&F 21-'6':5?
+C @A':A G152- 5&F? 215 ?4E5-'E5?:4ED2??5F A515
215 ?4E5 E5& '& @A4E 1215 $'1-*5? A2$5 +55&: 4?5B
C 2 '5F('6&4- -4 D4?'-'$5 $':5(-4 F5G12F'&G @52HB
&5?? 4 *E+*?0? :A212:-51 D15?5&-5F &4 ?*:A A*B
E''2-'&G'&:4&G1*'-C . A5-A51 @5 :4&-5ED 2-5 '-
'& '-? D*+ ':41 D1'$2-5 15 2-'4&?('& 2 '-? 652-*15? '-
@521? -A5 ?2E5 &4+ 5 2?D5:- - @2? '& D5165:-
A21E4&C @'-A -A5 G12&F5*1 46 A'? D 2&? 2&F -A5'1
15?* -?(E415 ?-*D5&F4*? -A2& -A4?5 @A':A 52$5&
A2? D51E'--5F 2&C 4-A51 E41-2 -4 2:A'5$5 .f.

1 U 0 , " +0 * G
* +$&# $ + &? $ / $ / # " ?
+ -$ &# 0# # '#&# * + # "# #+$ # ? # /
/ : # $ K$ / ?# *$? (" # $> $ $L
+$ - '#$ / 0 $ 0 $ ##$ G # < $ / ? $?#
/ '# $ $ &$ / >+$ $? $ / 9 #"$
*$+$V Y& $ $ / $ / '# $ $ 2@EB .
$- $'$ + #- 42E /# $ / 0 #/ ? G D

<

<

<S 8 6 6

-4 -A5'1 4@& 9&2-*12 ?4$515'G&2&F -A5C @515 ?4 ?-2*&:A C ?*DD41-5F +C -A5 2FE'12 &1'M*5L(2 G12&F55 46-A5 A'GA5?- 2*-A41'-C 614E A'? :4&&5J'4& @'-A -A5 :14@&(-A2- A' 'D @2? 2- 5&G-A '&F*:5F -4 2+2&F4& A'? D*1D4?5(2&F :4&-5&- A'E?5 6@'-A 2 ?'E' 21 2:- 46 15:4G&'-'4& @'-A -A2- E2F5 2- 414 9 4 &4-':5 @A2-5$51 @2? -2H5& 46 -A5 2-A4 ':H'&G(41 A'? 15:5&- 2112&G5E5&- -12&?6511'&G -A5 15G5&:C -4 A' 'D) * C <;-A(< A5 *?*2 42-A? 46 2 5G'2&:5 @515 -5&F515F -4)42&&2 2? M*55& 2&F 2FC D14D1'5-41 46 -A5 H'&GF4E(2&F -4 A' 'D 2? A51 A*?+2&F(2&F 6'&2 C -4 -A5'1 5 F5?- ?4& 1'&:5 A21 5?(2? A5'1.2DD215&- 2&F 2@6* ?*::5??41 4& -A5 F5E'?5 46 A'? E4-A51 6

C -A5 -5&41 46 -A5?5 2:-?*-A5 14C2 2*-A41'-C @4* F ?55E -4 +5 $'1-*2 C $5?-5F '&)42&&2 14E -A'? E4E5&-(A4@5$51(A' 'D 2??*E5F -A5 G4$51&B E5&- '&-4 A'? 4@& A2&F? A5 56'5:-? @515 ?44& $'?'+ 5 '& -A5 -A414*GA 15$4 *-'4& '&-14F*:5F '&-4 5$51C F5D21-E5&- F '&:*E+5&-? '& 466':5 @515 5,5:-5F @'-A4*- :515E4&C(-4 E2H5 @2C 641 &5@ 62B $4*1'-5? A5 5E'&G?('& D21-':* 21(@515 D 2:5F '& 5$51C :4&?'F512+ 5 D4?-(2&F -A5 D1'&:'D2 641-.

I $#$ $ &/ X $#$ $ +'##'#0'JJ'###' '"* '# # '? '# ' L &$-'JJ##'A'9 #$ +''#' #0' $# ' ?#'& ' ?G# '" ?' '##'&$-'J# A 0$ &$ > '/' /> ** *'G?#&?' $ $ ##$ ' $"' +'##' 'JJJ'&$-'J' & ++ '#' ?$'/$>'G$'+$/ ' P$ $?#' &&$# ' G$' j #$'/' $' '##'&$-' &$ * ' '# - &' ?'- G ' *' '## .' 'G#' &$ & >"$#'& L ?'/ - # '? *' ' ? >' /#'G# ? '$0 '' &? ?$' > '$' " $ >'$? #&$ /' ?' $ >+ ' &#00 ' * +' # " $' $ ' * ' $ +$/' G? +' ?'?$'0 G /'# G +$ %

8 6 6 <

15??5? 46-A5 H'&GF4E '&-1*?-5F -4 -A5'1 H55D'&G 4 5&G-A 41 F5G155 46 ?51$':5 @2? 2 4@5F -4 D 52F '& +5A2 6 46 -A5 2&:'5&- 4::*D2&- A5 21M*'? 2&F 21:A'4&5?? 46 4C2(-A5 D51?4&2 '61'5&F? 46-A5 2-5 M*55&(2&F @A4 A2F +55& D21-':* 21 C 15:4E E5&F5F +C A51 -4 A51 F2*GA-510? 62$4*1(@515 641:'+ C 5JD5 B 5F 614E 5G4$'2(@A4?5 ?-14&G :'-2F5 @2? G'$5& -4 4&)*2& 2&*5 A515 @515 &4 'E'-? -4 -A5 5?-2-5? 2&F A4&4*1? 2$'?A5F 4& -A'? :126-C E'&'4& 9

A5 ?-C 5 46 '$'&G 2- -A5 :4*1- @2? 4& -A5 E4?- -A4*GA- 5?? ?:2 5 46@2?-56* 5JD5&F'-*15 A5D*+B ':' 15$5&*5?(&4-@'-A?-2&F'&G '+512 2DD14D1'2-'4&? +C -A5 2-5 :41-5?(@515 @A4 C *&5M*2 -4 '- 4 ?*DD C -A5 F56':'-(466':5? @515 ?4 F -4 -A5 A'GA5?- +'FF51 A5 '&:4E5 F12@& 614E -A5 ?' H E2&*62:B -*15? 46 12&2F2(@A':A A2F +55& 2DD14D1'2-5F -4 F5612C T'&G 51F'&2&F0? D5&?'4&(@2? 2??'G&5F +C A' 'D -4 4&5 46 -A5 14C2 -152?*151? 41-*&2-5 C(Z'E5&5? 4+-2'&5F D4??5??'4& 46-A5 41F51(2&F A2F -A5 +4 F&5?? -4 -521 '- '& D'5:5? 5 -A5& @2'-5F 4& -A5 C4*&G E4&21:A(2&F 15E4&?-12-5F @'-A A'E 4& -A5 15:H 5??&5?? 46 E52?*15? @A':A E*?- '&62 'B + C ,*'* A'? :15F'- @'-A -A5 D54D 5 A' 'D C'5 F5F '& -A'U/'&?-2&:5 +*- 2 -A4*GA A5 -152-5F -A5 21:A. +'?A4,D @'-A -A5 G152-5?- 4*-@21F F56515&:5('- '? &4- 52?C -F F'?:51& -A5 A2+'-*2 '&6 *5&:5 4$51 A'? :4*&.

I $ > - -# - A '8 + &# 0 8 &&&J## A $ #$ $ +##' #0 H#+ * B@A ; # & $" $ JJ'###'&$-'JJ## A $ K$ 6# / '# / $ 2 , # & 2 / $"' '#' #0'#' &$- JJ#' /#$ F4

; ' ' ' ' ' '

?5 ?(: 2'-"&5F)6+6 -A5 2--51 +C A'? 2F* 2-41C +'4G12B DA51? 9

' -A'? :4* F &4-'62' ' -4 5J:'-5 F'?G*?-' 2&F F'?B M*'5-*F5 -A14*GA4*-' -A5 &2-'4& ' A5 E4?-' 2 21EB '&G ?CED-4E?' 46 '&?*+41F'&2-'4&' +5G2&' -4 2DD521 '&' F'66515&-' D21-?' 46 -A5 H'&GF4E ' &' &F2 *?'2U '&' D21-':* 21(2' :4&65F512-'4&' 46 -A5 &4+ 5?' @2?' 41G2&B 'L5F(@'-A -A5 2$4@5F D*1D4?5 46 15?:*'&G -A5 M*55&' 614E ' -A5 F*15??' '&' @A':A '-' @2?' ?2'F ?A5 @2?' A5 F +C A51 A*?+2&F ' -' -A5 ?2E5 -'E5 -A5 E4?-' -*E* B -*4*?' ?:5&5?' @515 5JA'+'-5F '&' 41F4$2('&' :4&?5B M*5&:5 46 -A5 A'GA A2&F @'-A @A':A -A5 &M*'?'-'4&' @2?' :211C'&G E2--51?' -A515 ' 5E+51?' 46 E2&C 46 -A5 D1'&:'D2 ' 62E' '5?(.'&: *F'&G D51?4&?' 46 +4-A ?5J5?(A2F +55&' 2115?-5F 4&' -A5 :A21G5 46 A515?C ' A'?' ?@55D'&G D14?:1'D-'4&' D14$4H5F 2&' '&?*115:-'4&(:4*&-5&2&:5F +C -A5 21M*'?' 46 1'5G4('&' @A':A -A5 D1'?4-'?' @515 +14H5&' 4D5&(2&F *:514(2&' &M*'?'-41(@A4 A2F E2F5 A'E?5 6 F5?51$5F C 4F'4*?' +C A'?' :1*5 B -'5?(&2114@ C 5?:2D5F 62 '&G '&-4 -A5 A2&F?' 46 -A5 '&6*1'2-5F D4D* 2:5 6 A5 12&F &M*'?'-41(5L2(

9 4+5?('F2 F5 Z'E5&5?(:2D J$'' > 4E5:'*?(5 5+ 5?-' Z'E5&' 64 ' > +21:2(5C JJJ :2D J$'' b*'&-2&' 2('F2 F5 '?&514?('+ ''' :2D J'$

6 *:514/@A4E A4&5?-' 21B -C1(@'-A 2 ?41-' 46 +2:HA2&F5F D*&(*?*2 C &':H&2E5? 5&5.' +1514? 15?*E5F A'? '&M*'?'-41'B 2' 6*&:-'4&? 4& A' 'D?? F52-A' E4&G A'? ?*+?5M*5&-' $':-'E? @2? -A5 G44F 1:A+'?A4D 2 2. $512($' 4?5 2?-' F2C? @515 5EB +'--515F +C A'? D51?5:*-'4&' '? '&?2&5 $'45&:5 2-' 5&G-A D14B $4H5F 2G2'& -A5 '&-51651 5&:5 46 G4$51&E5&-' '? :2?5 @2? 15.' 651159F -4 2 ?D5:'2' :4EE'??'4&(@'-^Z'E5&5? 2-' '-? A52F 5&.' -5&:59 @2? D14&4*&:5F 2G2'&?-' A'E' A5 D1'?4&? A5 A2F 6' 5F @515 5ED-'5F '? ,*FGE5&-? @515 15$51?5F(2?64*&F5F 4& '&B ?*66':'5&-' 2&F 61'$4 4*? G14*&F?' *-(2 2? @A2-' 612? -A'? -4 -A5

1:A+'?A4D 46 5$' 5(9 -AU ?-52FC 61'5&F 46 4 * E +*?(+*- @A4?5 &2E5 '? *&A2DD' C 15G'?-515F 4& ?4E5 46 -A5 F21H5?- D2G5? 46 -A5 -1'+*&2 (@2? ?4 '&-'E F2-5F 2? -4 15?'G& A'? 46 :5 A5 @A4 5 2662'1 @2? 1565115F -4 A5 14C2 :4*&:' +C A' 'D(@A4?5 5E '?A 5F*:2-'4& A2F &4- D15F'?D4?5F A'E -4 2&C 15$5 15&:5'641 -A5 '&?-'-*-'4& 2 :'1:*E?-2&:5 @A':A 4D5 12-5F M*'-5 2? E*:A -4 A'? D15,*F':5 @'-A -A5 E415 +'G4-5F D21- 46 -A5 &2-'4&(2? A'? 152 C 5J:5D-'4&2+ 5 2:-?6

A5 E'&F? 46 -A5 @'?5 2&F -A5 G44F @515 6' 5F @'-A ?2F&5?? 2? -A5C '?-5&5F -4 -A5 4@ E*1E*1? 46

A*&F15F? A5 A2F :4&?'G&5F -4 -A5 ?-2H5(2&F -A5 -A4*?2&F? A5 A2F D*&G5F '& E'?51C 5 @2? '& -A5 5&F ?5&-5&:5F>U&4 -4 +5 142?-5F 2 '$5 >+*- -4 15-'15 -4 A'? 4@& +5&56':5(2&F :4&6'&5 A'E?5 6-4 -A5 F*-'5? 46 2 A1'?B -'2& E'&'?-51 $ 4E5:'*?(64 > 5- 21-C1(5D'?- :::JJJ'''' :::JJJ'$' 5- 2 > 4. 15&-5(-4E'' :A2D J 21- ''''$' > $'5F4(b*'&:*2G5&2?(F'2(F5 5L2(

9 $'5F4 A2? G'$5& 2& 2ED 5 &4-':5 46 -A'? D15 2-5(51F'B &2&F? :4&65??41('& 4&5 46 A'? F'2 4G*5? 5 E5&-'4&? 2 ?*& G* 21 -2?-5('& 4&5 15?D5:-(M*'-5 @41-AC 46 2& '&M*'?'-41 A5 21:A+'?A4D H6D- 2 -2E5 '4& '& A'? D2 2:5(@*:A*?5F -4 2:: 4EB D2&C A'E @A5& A5 @5&- 2+142F(2&F '5 F4@& 2- A'?655- @A5& A5 ?2'F E2??'& -A5 :A*1:A A5 E4&?-51 A2F +55& ?-1'DD5F 46 A'? -55-A 2&b:2@? @A5& C4*&G(+*- A5 @2? 5?D2&-2+5 5& ?* $'?-2 5 2?D5-4(K ?2C? $'5F4(@A4 15B :41F? -@4 41 -A155 46 A'? G2EB +4?('4&? D2C(2- +5?- b*'&8 :*2G5&2?(

- 415&-5('?-(F5 0 &M*':' ?'- -4E'' :A2D J 21- ''''$'(> +21:2(T5C JJJ :2D J$' > b*'&:*2G5&2? F5 $'5F4(> U &(D*? D'?- 5D :::JJJ'''' :::JJJ'$' 5- 2

R 4F2 2 G5&-5(K ?2C? V*1':-2('& 1565 15&:5 -4 -A'? 2662'1(/ &4+5 C F5 'ED'2 ?2&G15 ?5 2$'25?:2&F2 'L2F4F5 4K / &2 -4E $'' '+$'' :2D J'7 2&F A5 D2'& C '&-'E2-5? A'? :4&$':-'4&(-A2- A' 'D?D1462&5 '&-5165 15&:5 +14*GA- 52$5&0? $5&G52&:5 4& A'? A52F('& -A5 ?A2D5 46 2 D15B E2-*15 F52-A V*1'-2 @2? ?5B :15-21C 46 -A5 4 C 66':5 '& -A5 521 C D21- 46 -A5 ?'J-55&-A :5&8 -*1C 2F A5 '$5F '& -A5 &'&5B -55&-A(A5 E'GA- A2$5 2:-5F -A5 D21- 46 2 415&-5 5 @2? :51B -2'& C &4- +4E 641 2 +'G4-

; ;

D4D* 21 F'?:4&-5&-(@A':A ?55E5F -4 +5 G12F*2 C ?@5 '&G '&-4 ?-15&G-A 641 ?4E5 -511'+ 5 :4&$* ?'4&(2&F -A5C 44H5F +2:H @'-A 64&F 15G15- -4 -A5 A2B :C4& F2C? @A':A -A5C A2F 5&,4C5F *&F51 -A5 -5EB D512-5 1* 5 46 51F'&2&F 2&F ?2+5 2

A5 2-A4 ':H'&G('& -A5 E52& -'E5(@2? D*1B ?*'&G A'? $4C2G5 -4 U2D 5? 5 A2F +55& 521&5?- C D15??5F +C -A5 52D4 '-2&? -4 $'?'- A'? &5@ F4E'&.' U'4&?(?44& 26-51 -A5 :4&M*5?- 9 5 &4@ @5&-(5??(A4@5$51('& :4ED'2&:5 @'-A -A2- 15M*5?-(-A2& -4 15 '5$5 A'? 4@& E'&F +C 2??*1'&G A'E?5 6 46 -A5 6'F5 '-C 46 A'? $':514C(4&?2 $4 F5 41F4$2 A2- ' *?-1'4*? E2& A2F &4- 5?:2D5F -A5 *?*2 4- 46 A*B E2&'-C A'? +1' '2&- ?*::5??5? A2F +14*GA- 4& A'E 2 6* E52?*15 46 -A5 5&$C @A':A ?55E? -4 @2'- 4& E51'- 'H5 '-? ?A2F4@ $5& E5& 'H5 4,2?(-A5 2?-' '2& 2E+2??2F41 2- 4E5(2&F 14?D514 4.' 4&&2(-A5 F'?-'&G*'?A5F -2 '2& :4EE2&F51(:4&F5B ?:5&F5F -4 5ED 4C -A5'1 '&6 *5&:5 2- :4*1- -4 F5D15B :'2-5 -A5 152- 2D-2'&0? ?51$':5?(2&F 12'?5 ?*?D':'4&? 46 A'? 4C2 -C '? :4*1-54*? E2&&51?(+4*&-'6* 21B G5??5?(2&F E2G&'6':5&- ?-C 5 46 '$'&G(@515 15D15B ?5&-5F 2? D4 '-': 21-? -4 ?5F*:5 -A5 2665:-'4&? 46 -A5 ?4 F'51C 2&F -A5 D54D 5 '? ?51$':5? @515 '& -A5 E21H5- 641 -A5 A'GA5?- +'FF51 5 A2F 15:5'$5F -A5 E4?- ?D 5&F'F 46651? 614E -A5 T'&G 46 12&:5 2&F -A5 D4D5 5 A2F :211'5F 4& 2 :4115?D4&F5&:5 @'-A 2J'E' '2& 2&F A' 'D(@A4 @4* F D*1:A2?5 A'? 2FB A5?'4&('6 D4??'+ 5((-4 -A5 2--51(2- 2&C D1':5 2&F '6

* EE4&-5(-41'2 F 2D4 '(-4E '$ '+ $' 4 $

A5 A2F &4- A'-A51-4 :4E E'--5F A'E?5 6+C 2&C 4$51- 2:-('- ?55E5F D14+2+ 5 A5 @2? 4& C @2'-'&G"U-4 +5 F5-51E'&5F '& A'? 6*-*15 :4*1?5 +C -A5 15?* - 46 T'&G 51F'&2&F0? ?-1*GG 5 @'-A A'? ?4&.'&. 2@ 9

A5?5 ?*GG5?-'4&?('& @A':A ?4E5 -1*-A(2? *?*2 (@2? E'&G 5F @'-A 2 21G5 '&6*?'4& 46 51141(G12F*B 2 C 5J:'-5F E415 2&F E415 *&52?'&5?? '& -A5 +152?- 46 -A5 :2*-'4*? 2&F &2-*12 C F'?-1*?-6* 51F'&2&F 5 2- 6'1?- 5&F52$4*15F -4 2+1'FG5 -A5 D4@51? 46 -A5 152- 2D-2'&(+C 15:2 '&G A2 6 -A5 -144D? '& A'? ?51$':5(&4-@'-A?-2&F'&G -A5 *&?5-- 5F ?-2-5 46 -A5 H'&GF4E 6 5 -A5& -44H -A5 F5:'?'$5 ?-5D 46 41F51B '&G A'? 15-*1& -4 2?-' 5(4& D15-5&:5 46 5ED 4C'&G A'E '& 2662'1? 46 G152- 'ED41-2&:5 2- A4E5 'Ü &41F51 -4 2 *15 A'E E415 5665:-*2 C(A5 ?4 5E& C D 5FG5F A'E?5 6 *&F51 42-A -4 -12&?651 -4 A'E(4& A'? 2&F'&G9 '& D2'&(-A5 G12&F.E2?-51?A'D 46 -) 2G4(@'-A 2 '-? D1'&:5 C F5D5&F5&:'5? 2&F 5E4 *E5&-?(-A5 &4+ 5?- G'6- '& -A5 D4??5??'4& 46 -A5 :14@& '&F'&G 2 -A'? '&5665:-*2 (2&F -A2- 4&?2 $4 ?-' D14:12?-'&2-5F A'? 15-*1& 4& $21'4*? D15-5J-?(-A5 H'&G0? *&52?'&5?? '&:152?5F -4 ?*:A 2 F5G155(-A2- A5 F5-51E'&5F -4 D15?? A'? 4@&F5D21-*15 641 2D 5?(2&F +1'&G +2:H('6 &4- -44 2-5(A'? -44 D4@516* $2??2 =

& -A5 =-A 46 5D-5E+51 < (51F'&2&F 5EB +21H5F 2- 21:5 4&2(4& +421F 2 @5 .21E5F ?M*2F.

I)4$'*?('-25 *?- '1 214 64 > 21' '2(-4E D.; > +21:2(-4E ''' JJJ ''' '+JJ$''' :2D JJ''' :2D J$'' >V*1'-2(-4E $'' '+ $'' :2D : J'' J$'' JJ$'' JJJ'' $ #$ $ #0 JJ'### &$- '+$'' :2D J'$' > *4&2::41?'(J## A 9 # $ + '# #0 '# &$- '21'4(D <; > ! 42('-2 F' K 9 # $ + '# #0 '## &$-

14&' 46' 2-2 2&' G2 5C?(' -2H'&G' @'-A' A'E' A'?' C4*&G' 2&F' +52*-'6*' +1'F5(' 2&F' 2' &*E514*?' -12'&' 46' 12B G4&5?5' &4+ 5?' &'-A5' ;=-A' 46' -A5' E4&-A(' 26-51' 2' +4'?-514*?' 2&F' -5F'4*?' D2??2G5(' A5' 152:A5F' -A5' D41-' 46' 5&42' 515(' :-'<(' -4' A'?' 2?-4&'?AE5&-(' A5' @2?' ,4'&5F' +C' -A5' 152-' 2D-2'&(' @A4(' 2F$'?5F' 46' -A5' H'&G0?' E4$5E5&-?(' A2F' :4E5' 614E' 2D 5?' @'-A' 2' ?E2 '6 55-' -4' E55-' A'E' A'?' 612&H' :4&F*:-' 46' A'?' G5&512 (' '6''-' F'F' &4-' F'?21E' 51F'&2&F' 46' A'?' ?*?D'B :'4&?(' ?A4@5F' A'E' -A5' D4 ':C' 46' :4&:52 '&G' -A5E N' 2&F' A5' -152-5F' 4&?2 $4' @'-A' 2 ' -A5' :4&?'F512-'4&' 2&F' ?A4@' 46' :4&6'F5&:5' @A':A' E'GA-' 'ED4?5(' &4-' E515 C' 4&' -A5' D*+ ':(' +*-' 4&' -A5' 'E E5F'2-5' ?*+,5:-' 46'-A5E 9

A5' -2 '2&' @1'-51?' 46' -A5' -'E5' 5JD15??' -A5'1' 2?9' "-4&'?AE5&-' -A2-' -A5' D2&'?A' G5&512 ' ?A4* F' A2$5' ?4' + '&F C' -1*?-5F' A'E?5 6' '&-4' -A5' +2&F?' 46' A'?' ?*?D'B :'4*?' E2?-51'N6' +*-' A5(' F4*+- 5??(' 65 -' ?-14&G' '&' -A5' :4&?:'4*?&5??' 46' A'?' 4@&' '&-5G1'-C' A515' 2DD521?' -4' A2$5' +55&' &4' G44F' 152?4&' 641' 'ED52:A'&G' -A'?N' A'?' E4?-' 5M*'$4:2' 2:-' @2?' A'?' F5 2C' -4' 4+5#' -A5' 14C2' ?*EE4&?' *-' E*:A' @5'GA-' '?' 152?4&2+ C

'#' A' 8 #&&#$ /# #' 2 ' /($ ' +'#'' -'<;N /' #$ '<S ' A' 8#$ ' #$ /# $-' #0'HHH' &$-#A P '# ' :#L $' -';S '>'; # & $" $' /' '# /' ' $'<(, # &' (/#$' 5=

' '2&&4&5(*+' ?*D12' >' *EE4&-5(-41' F' 2D' -4E' '$' '+$'' :2D' :' >' ':*4(4??2? 5E'64'<S > *4&2:

:41?'(D'); > 2DE2&C(5.' E41'2?' '?-41':2?(-4E''D'< ;' >I' ?-5(K' ?2C? 2DE2&C' 46' -A5' ?M*2F14& @A':A' +415' -A5' H'&G614E' 21:54&2(R' 75 D*5F5 F5:'1 6*' 5' F-'E4' 21E2E5&-4 M*5?2'4 F5 2M*5 2' :2D'-2 I c' *'::'21F'&'(-4E''$'D' ' > 2:A'2$5 '(5G2L' ''' 2' 4B E2(5--' JJ''' > '2&&4&5(?-41' #0'HHH' :2D'

F*5 -4 A'? 4@& 5JD 2&2-'4&(-A2- A5 @2? F5-5115F +C -A5 F'?-12:-5F ?-2-5 46'-A5 :4*&-1C(21'?'&G 614 E "-A5 D14D4?5F -12&?651 46 D14D51-C -4 -A5 &G5$'& +214&?(2? @5 2? 614 E -A5 D15:'D'-2-5 F'?+2&'F&G 46 -A5 2112C(@A':A '- 15M*'15F 2 A'? 2*-A41'-C -4 D15$5&- 614 E +152H'&G'&-4 4D5& E *-'&C 9 4 -A5?5 E 4-'$5? E 2C +5 D14+2+ C 2FF5F -A5 &2-*12 (-A4*GA D51A2D? *&:4&?:'4*?(15 *:-2&:5 -4 15 '&M*'?A -A5 5J2 -5F ?-2B -'4&('-- 5 UA41- 46 2+?4 *-5 ?4$515'G&-C(@A':A A5 A2F ?4 4&G 2&F ?4 G 41'4*? C 6' 5F

5 A2F('&F55F(41F5F '- 4$51 A'? $':514C2 -C @'-A E 4?- D1'&:5 C ?@2C% +*- A5 A2F 2??* E 5F &4 D4@51? -4 @A':A A5 @2? &4- 5&-'- 5F +C A'? ?51$':5? 2&F D5:* '21 ?'-*2-'4& '? D*+ ':4D512-'4&? '& -2 C A2F +55& *&'641 E C :4&F*:-5F 641 -A5 2F$2&-2G5 46 A'? :4*&-1C(2&F(*&-' -A5 2-5 6'&2 -152-C @'-A $ & @515 +$# > F'15:-5F -4 -A5 5JD* ?'4& 46 -A2- D4@51 +5C4&F -A5 D? ,9 '&:5 -A2- 5$5&-(A5 A2F +*?' C 4::*D'5F A'E?5 6@'-A -A5 '&-51&2 2662'1? 46 2D 5?(641 @A':A A5 E2F5 E2&C 5J:5 5&- D14B $'?'4&?(:4&-1'$'&G +C A'? :4&?* E E2-5 2FF15?? -4 15B :4&:' 5 -A5 E4?- :4&6 ':-'&G '&-515?-? 2&F D21-'5? -A4*GA -A5 'F4 46 -A5 21E C 2&F -A5 D54D 5(-A515 '? &4- -A5 ? 'GA-5?- 5$'F5&:5 46 2& 2--5 E D- -4 D51$51- A'? D4D* 21'-C -4 2& *&@41-AC D*1D4?5 A515 '?

9 V*1'-2('+'$'' :2D JJJ' ? #&$ / ' 8 $ ' $-# $ ' #0' 6 C 'E'-? @' ' &4- 2 4@ ## &$- &J## A &JJ'## A # + /#' 144E 641 -A5 :4ED5J D4'-':? - 0 ' $ ' + 'J### &?$- '&###' 2&F 65*F? 46 -2 C('&-4 @A':A A 8 #&&$ /# #' + ### ' - 'F/@' 4&?2 $4 5&-515F @'-A 2 ' -A5 '$ #0# A 9 # $' + '#' #0' '#' 6155F4E 46 2& '&F5D5&F5&- D4B &$- '' '## 'J 'A ' $ #$ $' + '##' -5&-2-5 55 -A5 F5-2' ?(2D #0 JJ' ### '&$- '' '##

;

2DD5212&:5 46 A'?A2$'&G +55& :411*D-5F(41 5$5& F2LL 5F(+C -A5 ?D 5&F'F 46651?15D52-5F C E2F5 A'E +C -A5 F'66515&- D4-5&-2-5? 46 *14D5 &-A5 :4&-121C(-A5 D14*F 2&?@51 15:41F5F 46 A'E -4 4D5)* '*? +152-A5?(2 ?D'1'- 46 F5-51E'&5F 4C2 -C(D5165:- C '1B 15:4&:' 2+ 5 @'-A 2&C-A'&G ?'&'?-51 41 ?5 6'?A '& A'? E4-'$5? 9 A5 -2 '2& @1'-51? 46 -A5 -'E5(@A4 2665:- -4 ?D52H 46 -A5?5 E4-'$5? @'-A ?4E5 F'?-1*?-(@515 '-- 5 2::*?-4E5F -4 ?*:A 5J2ED 5? 46 ?-52FC F5$4-'4&N6 +*- -A5 A'?-41'2&(@A4 15$'5@? 2 -A5 :'1:*E?-2&:5?(E*?-2F E'- -A515 @2? &4-A'&G -4 ,*?B -'6C ?*:A F'?-1*?-(2&F -A2- -A5 4& C 5J:5D-'4&2+ 5 2:-? '& 4&?2 $40? 2FE'&'?-12-'4& @515 D51641E5F &4- -4 2F$2&:5 A'? 4@& '&-515?-?(+*- -A4?5 46 A'? E2?-51(2&F '& -44 ?-1':- 4+5F'5&:5 -4 A'? :4EE2&F? T'&G 51F'&2&F @2? -A5 2?- D51?4& @A4 +2F :2*?5 -4 :4ED 2'& 46 -A5E

6-51 M*'--'&G 5&42(-A5 14C2 ?M*2F14& @2? F1'$5& +C :4&-121C @'&F? '&-4 -A5 &5'GA+4*1'&G A21B +4*1 46 41-46'&4(@A515 51F'&2&F 15:5'$5F '&-5 'B G5&:5(@A':A D14E'?5F -4 :A2&G5 A'? F5?-'&2-'4& 2 -4G5-A51 A'? @2? -A5 F52-A 46 A'? ?4&.'&. 2@(-A5 C4*&G T'&G 46 2?-' 5

9 V*1'-2('+$'$':2D J'$ -R $ 12& 2D'-2&(K 52C? *':'21F&'($:4&?:'4 F5 ?4?: D5--'(M*2 '$'15 $ - $ 2$5$2 2$*-F *'(K]:$ /<?-I FI -2 -4E$'$ D 7 A'? @2C 46 F2E&'&G 2 :A2B 12:-51 +C ?*1E'?5 '? $51C :4EB E4& @'-A -2 '2& @1'-51? 46 -A'? 2G5(@A4 *&'641E C 15?41- -4 -A5 $51C @41?- E4-'$5 2? -A5 H5C 46 @A2-5$51 '? F*+'4*? 41 '&5JB D':2+5 '& :4&F*:- 4-2 2?*FB F5& F52-A(641 5J2ED 5(4::*1?(@'-A4*- 2- 52?- 2 $ 46 D4"?4&614E ?4E5 A2&F 41 M-A51 A2- 2 65216*:4EE5&-21C 4& ? + $ *? $ /%

ʻ ʻ ʻ ʻ ʻ ;

A'?ʻ 5$5&-(ʻ ?4ʻ *&5JD5:-5Fʻ 2&Fʻ 2@6* Cʻ ?*FF5&(ʻ @2?ʻ 4::2?'4&5Fʻ +Cʻ 2ʻ 65$51ʻ +14*GA-ʻ 4&ʻ +Cʻ -44ʻ $'4 5&-ʻ 5J51:'?5ʻ 2-ʻ 2ʻ G2E5ʻ 46ʻ+2 (ʻ 2-ʻ 2&ʻ 5&-51-2'&E5&-ʻ E2F5ʻ 641ʻ A'Eʻ +Cʻ A'?ʻ 62$4*1'-5ʻ 2&*5 (ʻ '&ʻ *1G4?(ʻ @A515ʻ -A5ʻ :4*1-ʻ @2?ʻ-A5&ʻ A5 Fʻ A14*GAʻ -A5ʻ *&?H'6* &5??(ʻ 46ʻ A'?ʻ DAC?':'2&?(ʻ 2?ʻ '-ʻ @2?ʻ ?2'F(ʻ @A4ʻ &5G 5:-5Fʻ -4ʻ + 55Fʻ A'E(ʻ -A5ʻ F'?41F51ʻ 12D'F Cʻ G2'&5Fʻ G14*&F(9ʻ 2&Fʻ 4&ʻ -A5ʻ ?'J-Aʻ F2Cʻ 26-51ʻ A'?ʻ 2--2:H(ʻ +5'&Gʻ -A5ʻ ; -Aʻ 46ʻ 5D-5E+51ʻ < (ʻ A5ʻ +152-A5Fʻ A'?ʻ 2?-6ʻ 5ʻ @2?ʻ +*-ʻ-@5&-C.5'GA-ʻ C521?ʻ 4 F℠ 46ʻ@A':Aʻ +1'56ʻD51'4Fʻ A5ʻ A2Fʻ 5&,4C5F(ʻ 41ʻ 5&F*15F(ʻ -A5ʻ ⍰ʻ G4 F5&ʻ :215?ʻ⍰ʻ 46ʻ?4$5B 15'G&-Cʻ +*-ʻ '-- 5ʻ E415ʻ-A2&ʻ-@4ʻ E4&-A?(ʻ F2-'&Gʻ614Eʻ A'?ʻ 15:4G&'-'4&ʻ +Cʻ :41-5?ʻ '?ʻ +4FC(ʻ 26-51ʻ +5'&Gʻ 5EB +2 E5F(ʻ 2Cʻ'&ʻ ?-2-5ʻ 641ʻ-@4ʻF2C?(ʻ F5:412-5Fʻ @'-Aʻ -A5ʻ '&?'G&'2(> -A5ʻ E4:H51Cʻ 46ʻ14C2 -C(ʻ 2?ʻ '-ʻ A2Fʻ D14$5:ʻ -4ʻ A'E(> 2&Fʻ @2?ʻ-A5&ʻ F5D4?'-5FU'&ʻ -A5ʻ :4&$5&-ʻ 46ʻ # $* ʻ $ʻ *1G4?(ʻ -4ʻ 2@2'-ʻ'-?ʻ6'&2ʻ15E4$2ʻ-4ʻ 12&2F2(ʻ 2G1552+ Cʻ -4ʻ A'?ʻ 2?-ʻ 15M*5?-U℅

9ʻ A!'D⍰?F'?41F51ʻ@2?ʻ 'GA-B Cʻ15G21F5Fʻ2-ʻ6'1?-ʻ+Cʻ A'?ʻ 5EB '?Aʻ DAC?':'2&?#ʻ @A4?5ʻD12:-':5 2&F9D15F':-'4&?ʻ@515ʻ2'H5ʻ:48B F5E&5Fʻ+Cʻ-A5'1ʻ:42F,*-41ʻ 4F4.ʻ $':4 21'2&4.(ʻ2&ʻ -2'2&ʻF4:-41ʻ A'GAʻCʻ:4EE5&F5Fʻ+Cʻ 21-C1(ʻ 2?ʻR'ʻ'&-51ʻDA'4?4DA4?ʻ5-ʻ E5F'B :4?ʻ*:'F2 2ED2?Kʻ 5ʻ@2?ʻ2-ʻ 52?-ʻ-A5ʻ+5--51ʻD14DA5-ʻ4&-A'? 4::2?'4&ʻ 21-C1(ʻ D*?ʻ D'?-ʻ 5Dʻ:::J''' > V*1'-2(ʻ-4Eʻ$'ʻ '+ʻ $''ʻ :2Dʻ J'$ 6ʻ $'5F4(ʻb*'&:*2G5&2?(ʻ ʻ 2-ʻ<(ʻM*'&:ʻS(ʻF'2ʻ > 41B -*&2-5Cʻ641ʻ 51F'&2&F⍰?15D*-2B -'4&(ʻ A'ʻ'D⍰?ʻF52-Aʻ@2?ʻ2--5&FB 5Fʻ +Cʻ-44ʻ*&5M*'$4:2ʻ:'1:*EB ?-2&:5?(ʻ 2&Fʻ 15:41F5Fʻ +Cʻ-44ʻ E2&Cʻ5C5.@'-&5??5?(ʻ-4ʻ2FE'-ʻ -A5ʻ ?*G35?-'4&ʻ 46ʻD4'?4&ʻ -ʻ ?55E?(ʻA5ʻF12&H61555Cʻ46ʻ:4Fʻ @2-51ʻ@A'5$51CʻA4-ʻ A5ʻ65B $51ʻA5ʻ+14*GA-ʻ4&ʻ@2?ʻ2&ʻ5D'B F5E':(ʻ@A':Aʻ2-ʻ-A2-ʻ-'E5ʻ266':-B 5Fʻ 2?-'5ʻ 2:A'2$5 '(ʻ 5G2Lʻ ''ʻ2ʻ 4E2(ʻ 5-ʻ JJ'J > V*&'G2(ʻ &2(ʻ2&4<)ʻ ʻ 21-C1(ʻ D*?ʻ D'?-ʻ5Dʻ :::J'''ʻ:::J$'.℠> 5E2F5L(ʻ :2Dʻ::$''ʻ>ʻ $'ʻ 4E5:'*?(ʻ64ʻ > 21+2,2(ʻ &25?(ʻ 62&4

; S

A' 'D @2? 46 E'FF 5 A5'GA-N A5 A2F 2 62'1(6 41'F :4ED 5J'4&(15G* 21 652-*15?(4&G 6 4@'&G 4:H?(2&F 2 @5 .E2F5 ?CEE5-1':2 6'G*15 &F55F(A5 @2? ?4 F'?-'&G*'?A5F 641 :4E5 '&5?? +4-A 46 D51?4& 2&F :4*&B -5&2&:5(-A2- A5 '? F5?'G&2-5F 4& -A5 14 46 D2&'?A ?4$515'G&? 2? 5 'D5 5 51E4?4(41 -A5 2&F?4E59 '? E5&-2 5&F4@E5&-? @515 &4- ?4 5J-1241F'&21C A5 62-A51 46 A21 5? D4??5??5F ?:21:5 C 2 ?'&G 5 M*2 '-C '&:4EE4&'@'-A A'? 15E21H2+ 5 ?4& 5 @2? 12?A 2&F 'ED5-*4*? '& A'? -5ED51(612&H 2&F :215 5?? 5 @2? +41& -4 G152- 5JD5:-2-'4&?(2&F 521 C 2::*?B -4E5F -4 :4EE2&F(@A':A ?55E5F -4 6 A'E @'-A 2 :1*F5('&-5ED512-5 2E+'-'4&('ED2-'5&- 2 'H5 46 :4&B -14 41 :4*&?5 5 @2? &4- @'-A4*- G5&514*?(2&F 5$5& E2G&2&'E4*? ?5&-'E5&-?N +*- A5 2+2&F4&5F A'E?5 6 -4 -A5 'ED* ?5 46 -A5 E4E5&-(@A5-A51 641 G44F 41 5$' (2&F 2? A5 @2? &2-*12 C '&F4 5&-(2&F 64&F 46 D52?*15(A5 @' '&G C 15D4?5F -A5 -4' 46 GM. $51&E5&- 4& 4-A51?(@A4(2? *?*2 (-A4*GA- E415 46 -A5'1 4@&' &-515?-? -A2& -A4?5 46 -A5 D*+ ':' '? 521 C 5F*:2-'4& 5J5ED-5F A'E 614E -A5 +'G4-1C :A2B 12:-51'?-':46 -A5 D2&'21F?N 2&F(A2F A5 '$5F(A5

< > ' ':*4(4?2? 5.(E41 64 <S > 2&F4$2 ('?-(F5 214? -4E ' D <<
k ' ' ':*4(64 <S (<SS .> 2&F4$2 (*+? ?*D12
21-C1(-4*:A5F @'-A -A5 E5B 2&:A4 C 62-5 46 A'?C4*&G ?4$5. 15'G&(D2C?-A564 4@'&G&4- '&5 5B G2&-(2&F :51-2'&C&4-D21?' E4&'B 4*?-1'+*-5 -4 A'? E5E41C('& 2 5--51 @1'--5&2 65@F2C? 26-51 A'? F52-A(@A':A('- E2C +5 &4-':5F(A5 E2H5? 2 F2C 521 '51 -A2& 4-A51 :4&-5ED4121C 2::4*&-? :-2$4 :2 5&F2? :-4+1'? 2&'. E2E 5E'?'- ' 5 , *$5&'?(641E4. ?*?(D* :A51(5 5G2&?(2&' E4D4B 5&? 5- '&G5&'4(D14:51E $2 'F?5. M*5 &2-*1' (*- 64? $5E*? 5$2. &*'-K D*? D'?- 5D :::J$'(

E'GA-' A2$5' F4&5' E*:A' -4' E'-'G2-5' -A5' G1'5$4*?'
2+*?5?' 46' -A5' '&M*'?'-'4&' ?' '-' @2?(' A'?' D15E2-*15'
F52-A' F5D1'$5F' A'E' 46' -A5' 4DD41-*&'-C' 46' :4ED5&B
?2-'&G(' +C' -A'?' ?'&G 5' G44F' 2:-(' -A5' E2&'64 F' E'?:A'56?'
46' A'?' 2FE'&'?-12-'4&

A'?' 5$5&-(' -44' 'ED14+2+ 5' -4' A2$5' 641E5F' 2&C'
D21-' 46' -A5' :2:*2-'4&?' 46' -A5' E4?-' 621.?'GA-5F' D4 'B
-':'2&(' ?D152F' G5&512' :4&?-51&2-'4&' -A14*GA4*-' -A5'
:4*&-1C' A5' 4 F' 2FA515&-?' 46' 51F'&2&F(' @'-A'
Z'E5&5?' 2-' -A5'1' A52F(' &4@' 44H5F' 641@21F' @'-A'
:4&6'F5&:5' -4' A'?' 155?-2+ '?AE5&-' '&' -A5' 15G5&:C'
2&C' 4-A51?(' A4@5$51(' 'H5' 21:' 2??4' F5' 2' 5G2('
@A4?5' 4C2 -C' -4' -A5'1' 4 F' E2?-51' A2F' &4-' +55&' D1446'
2G2'&?-'' -A5' -'E5?(' $'5@5F' -A'?' @'-A' ?4E5' 2DD15A5&B
?'4&%9' -A51?(' 2G2'&(' @A4' A2F' 4D5& C' 614E' -A5' 6'1?-''
'&H5F' -A5'1' 641-*&5?' -4' -A4?5' 46' A'?' 1'$2 (' 2?' -A5' *H5'
46' 2,212(' -A5' 21M*'?' 46' ' 5&2(' 2&F(' 2+4$5' 2 (' 4&'
)*2&' 2&*5 (' ?2@' '&' '-' -A5'1' :51-2'&' 1*'&(' 2&F'-*1&5F'
-A5'1' -A4*GA-?' -4@21F?' 2J'E' '2&(' 41' -A5' T'&G' 46'
41-*G2 (' 41' 2&C' 4-A51' E4&21:A' @A4?5' :4&&5J'4&'
@'-A' -A5' 14C2' 62E' C' E'GA-' 2664 1F' 2' D 2*?'+ 5' D15B
-5J-' 641' '&-516515&:5' '&' -A5' G4$51&E5&-' &' A' 'D0?'
5E'?A' 64 4@51?' -A5' -'F'&G?' 65' 'H5' 2' -A*&F51+4 -(
2&F' '&' -A5'1' +5@' F51E5&-' -A5C' ?55E5F' 'H5' ?4' E2&C'
62E'?A5F' +'1F?' 46' D15C(' ?-' ' A4$51'&G' 14*&F' -A5' A26.1

I' 8$ &#$ ' / ' $' : "$' $-L $>#" *' ? ' /' D ' *' '$'
- $ ' '?$' '0 ' ' *' ? ' # ' 6 >' : 0' #+ ' !' ; ' $'
/ 0# ' - ##&#$ 'G? ' '+$D' & + ' ' - ' / ' ' ' , '
' *'$' + / +' -? $ ' $ ' $L $/ $' $' ' / '*## $' >' + / '$'
G$> ' ' ? '* & ' ? 'G$" ' ' / ' / V A M9 #$' +' '#'
*'?#' /$>'$-- # /' '?#+'$' & $ #0' '##' &$-' JJJ#J

F5$4*15F' :21:2??' 614E'.@A':A' -A5C' A2F' +55&' *&:515.' 4&'4*? C' ?:215F 9

A5' @5'GA-' 46' -2 5&-' 2&F' D4D* 21' :4&?'F512-'4&' @2?' *&F4*+-5F C' 4&' -A5' H'&G0?' ?'F5' A5' E4?-' 641B E'F2+ 5' 46' -A5' 4DD4?'-'4&(2&*5 (' A2F' F5: '&5F' G152- C' '&' :15F'-' @'-A' -A5' &2-'4&' F*1'&G' -A5' ?A41-' F'?2?-14*?' D51'4F' 46' A'?' 2FE'&'?-12-'4&' A' 5' -A5' 1:A+'?A4D' 46' 4 5F4(' @A4' E'GA-' +5' :4&?'F515F' 2?' -A5' 52F51' 46' 51F'&2&F0?' D21-C(' D4??5??5F' -2 5&-?(' 5&51GC(' 2&F' 15D*-5F' ?2&:-'-C' 46' :A212:-51(' @A':A(' :4E+'&5F' @'-A' -A5' 2*-A41'-C' 46'A'?' ?-2-'4&(' G2$5' A'E' *&+4*&F5F' '&6 *5&:5' 4$51' 2 ' : 2??5?' 46' -A5' 2?-'B '2&?' -' @2?' 641-*&2-5'641' -A5' 2&F(' '&' -A'?' 5E51B G5&:C(' -A2-' -A5' D1'E2:C' @2?' '&' ?*:A' 2+ 5' A2&F?' -' ,*?-'6'5F' -A5' @'?F4E' 46' ?2+5 20?' :A4':5(' E2F5(' '&' 4DD4?'-'4&(' '-' E2C' +5' 15E5E+515F(' -4' -A5' @'?A5?' 46' 51F'&2&F(' @A4' @2?' &4@' -4' 152D' -A5' G152-5?-' +5&56'-' 614E' '-

A2-' D15 2-5(' 6415?55'&G' -A5' 2&21:AC' 'H5 C'-4' 21'?5' 4&' A' 'D0?' F52-A(' 2??5E+ 5F' -A5' &4+' '-C' D15?5&-' 2-' -A5' :4*1-(' '&' A'?' 4@&' D2 2:5(' -A5' F2C' +56415' -A'?' 5$5&-' -44H' D 2:5' -' @2?' -A515' 2G155F' -4' &2E5' 2' D14$'?'4&2' :4*&:'(' 41' 15G5&:C(' @A4' ?A4* F' :211C' 4&' -A5' G4$51&E5&-(' 2&F' D14$'F5' 641' -A5' -12&M*' '-C' 46' -A5' H'&GF4E' -' :4&?'?-5F' 46' ?5$5&' E5E+51?' @'-A' -A5' 1:A+'?A4D' 46' 4 5F4' 2-' '-?' A52F(' -A5' *H5' F5' &62&-2F4(' -A5' 12&F' 4&?-2+ 5(' 2&F' -A5' FE'12' 46' 2?-' 5(' +4-A' :4&&5:-5F' @'-A' -A5' 14C2' 62E' C(' -A5

*H5 F5 2,212(2 D1'&:'D2 52F51 46 -A5 4DD4?'-5 62:-'4&(2&F -@4 5E'?A 41F? 4 E5&-'4&' @2?' E2F5 46 2&*5 9

A5 &4+ 5?' '& 2 ?*+?5M*5&- :4&$5&-'4&((4& -A5 <?- 46 :-4+51(12-'6'5F -A5?5 D14:55F'&G?(2&F +4*&F -A5E?5 $5?' &4- -4 :211C 4& D1'$2-5 @21(41 2--5ED- -4 D4??5??' -A5E?5 $5?' 46 -A5 M*55&0?' D51?4&(2&F -4 5ED 4C 2 -A5'1 2*-A41'-C '& ?*DD41-'&G -A5 D14$'B ?'4&2 G4$51&E5&-(" @A4?5 -5112 @2?' 'E'-5F -4 -A5 5&F 46 5:5E+51 6

E55-'&G 46 :41-5?' @2?' @2&-'&G -4 G'$5 $2 'F'-C -4 -A5'1 2:-?(2?' @5 2?' -4 5JD15??' -A5 D4D* 21 @' '& 15 6515&:5 -4 2 D51E2&5&- ?5-- 5E5&- 46 -A5 G4$51&B E5&- A515 @2?' ?4E5 F'66515&:5 46 4D'&'4&(5$5& 2E4&G -A5 H'&G0?' 61'5&F?(2?' -4 -A5 5JD5F'5&:C 46 ?*EE4&'&G -A2- +4FC 2- -A'?' :1'?'?N +*- -A5 G152-5?- 'ED5F'E5&- 214?5 614E -A5 M*55&0?' 15 6*?2 -4 ?'G& -A5 @1'-?' 641 -A2- D*1D4?5 X

A'?' *&A2DDC 2FC0?' :4&F'-'4& A2F +5:4E5 -1* C F5D 412+ 5 *1'&G A51 A*?+2&F0?' ' &5??' ?A5 A2F &5$51 56- A'?' +5F?'F5N +*- &5'-A51 -A5&(&41 ?'&:5 A'?

]' 9## # $' + '#' #0'##'&$-' H: A $ #$ $' +'##' #0'JJ#J' &$-'# A ' $ > ' - ' -# ' -'&&&J'## A 9 #"$' $ ' / ' ''$ '2@EB A ''8 + &# ' 0'8 'H#+ ##'*0 'B) '9 # $' $ '/ ' $"' #+' '#' #0'##' &$-'J'# '*# /' '$? # >' * ' ?' $ + '+$/'0>' '$ '8 L + K' * ' B3 .' $ /' *$# ?* >' &? /'0>' 0 '&$-'J'## .'$ /' ; # $ # $' #0' ###' &$-'J#' .0 ?$'H#+ '*# /' ?' **#&' *' " '$' ?#'!#+& ' ' =#' 'G$ $ /' 0>' $ gM' -# '&&&J'## .' $ /'#'& $=' +& /'0>' ?'G /' *' ?' #"#L $'# + '&# /'$' $'0>' 9 # $' &' &# .' ?' $ &?L 0# ? -0'0# " $-? ' '$ /'$ ' &$#+'$' +$ >'+ # '$ /' L '#& ' * ' ? ##=' ? '$'#*' #D' ; # $ # $' ? >'G 'G D# "' J- >'* '?#'0 $ #*#&$ # ? ' D ' *' '$' ?

;

F52-A7 A2F +55& ?55& -4 ?A5F 2 -521 A5 15E2'&5F '& 2 ?-2-5 46 ?-*D'F '&?5&?'+' '-C(?'--'&G '& 2 F21HB 5&5F 2D21-E5&-(A51 A52F 15?-'&G 4& A51 A2&F(,2&F A51 'D? : 4?5F(2? E*-5 2&F 'E E4$2+ 5 2? 2 ?-2-*5 A5& 2DD '5F -4(641 '??*'&G -A5 &5:5??21C ?*E E4&? 641 -A5 :41-5?(41 -4 E2H5 2DD4'&-E5&-? -4 466':5(# 641 2&C 4-A51 D15??'&G +*?'&5??(@A':A 15M*'15F A51 ?'G&2-*15(?A5 15D '5F(R C 62-A51 @' 2--5&F -4 2 -A'? @A5& A5 15-*1&?N A5 '? E*:A E415 :4&$51?2&- @'-A +*?'&5?? -A2& 2 E N A2$5 &4 4-A51 F*-'5? &4@(+*- -4 D12C 641 -A5 ?4* 46 EC F5D21-5F A*?B +2&F K A5 4& C 41F51? ?A5 @2? H&4@& -4 ?'G& @515 641 D2C'&G -A5 ?2 21'5? 46 A51 5E'?A E*?'B :'2&? N 641 '& A51 2+,5:- ?-2-5 ?A5 64*&F ?4E5 :4&?4B 2-'4& '& E*?':(46 @A':A ?A5 A2F +55& D2??'4&2-5 C 64&F 614E :A' FA44F ? A5 65@ 15E21H? @A':A ?A5 *-. -515F @515 F'?:155- 2&F ? 5&?'+5(641E'&G 2 ?'&G* 21

$ &? -- *Q# "" /#L
$ /'# '$ '?# '/#**#& # 0! &L
/ &$ # "" ? & " ? ?
? ' " / = ?$? +L
+ G /0'# * +$ 0L
"" +$/ 0> ? - - $?L
>< ?$ +$ > &# # +#"?
& , > * 0 >
? + $ / ? $& *? ? L
+$# / 0 - 0! &#
$? *? ? $ # < ?$
$* $? /& $ +L
0 #G$, # #+& $# L
/ G?$# * & # +#"?0
+$/ $& $ $ /G? ? # #
G /- ? & + J- /# * /# $ /C # L
< $ / *# $ > ?$ #* ?

G$ - & ? $-L
- # + *$ " &> ?# ?$/
$ $/>0 / 0> ? +#L
$ # * Q# "" /# $ / $
2@E@< ?$ $?
, # $ G G$ & $ #L
> 0 # "" ?$ $& # / 0
? / D / + ?$' &#/ /?$?$/
* * # /?# #"# $ & $#+ ? ?
" &> 0>?# $0/#&$ # < - L
?$- ? ? " /I ?$ # ?$/
' 0 * +$ >$&& - /0>
? & ++ ? ?$?$' &L
&$ # ? ?# ? ?
$* ? ? /# & # # J=
$- 9 # $ #0 '# &$-
JJ'#

:4&-12?-' @'-A' -A5' G5&512 ' 5J-12$2G2&:5' 46' A51' 2:B -'4&?' &' -A5' @A4 5(' A4@5$51(' A51' D51-'&2:'-C' '& 156*?'&G' -4' ?'G&' 2&C-A'&G' @2?' 2--5&F5F' @'-A' 2?' E*:A' G44F' 2?' 5$' (' ?'&:5' '-' D15$5&-5F' A51' &2E5' 614E' +5'&G' *?5F(' 2?' '-' @4* F' *&F4*+-5F C' A2$5' 46-5&' + 5&' '&' -A5' 5J'?-'&G' ?-2-5' 46' -A'&G?(' 641' D51&':'4*?' 2&F' D21-C' D*1D4?5? 9

'&F'&G' '-' 'ED4??'+ 5' -4' 4+-2'&' 9-A5' M*55&0?' :4B 4D512-'4&(' -A5' :4*&:' ' 2-' 5&G-A' 15?4 $5F' -4' '??*5' -A5' @1'-?' 46' ?*EE4&?' '&' -A5'1' 4@&' &2E5(' 2?' 2' E52?*15' ,*?-'6'5F' +C' &5:5??'-C' A5' D2:5' 46' E55-'&G' @2?' 6'J5F' 2-' *1G4?' '&' -A5' 5&?*'&G' E4&-A' 46' 4$5E+51(' 2&F' G152-' D2'&?' @515' -2H5&' -A2-' -A5' F'66515&-' :'-'5?' ?A4* F' '&?-1*:-' -A5'1' 15D15?5&-2-'$5?' '&' -A5'1' $'5@?' 15?D5:-'&G' -A5' * -'E2-5' F'?D4?'-'4&' 46' -A5' G4$51&B E5&- P

4&G'+56415'-A'?(' '&F55F' 'EE5F'2-5 C' 26-51' A' 'D0?' F52-A(' 5--51?' A2F' +55&' F5?D2-:A5F' +C' Z'E5&5?' 2&F' A'?' 61'5&F?' -4'-A5' 2-A4 ':'H'&G(' 2:M*2'&-'&G' A'E' @'-A' -A5' ?-2-5' 46' 2662'1?(' 2&F' *1G'&G' A'?' 'EE5F'2-5' 15-*1&' -4' 2?-' 5' 5' 15:5'$5F' -A5E' 2-' 41-46'&4' 5' F5B -51E'&5F(' A4@5$51(' -4' :4&-'&*5' A'?' $4C2G5(' '&' @A':A' A5' A2F' 2 152FC' 2F$2&:5F' ?4' 621(' -4' 2D 5?' A5' @21C' E4&21:A' D51A2D?' -A4*GA-' -A2-' -A5' 2?-' '2&?(' @A4?5' 2--2:AE5&-' -4' A'?' 4@&' D51?4&' A5' E'GA-' @'-A' ?4E5' 152?4&' F'?-1*?-(' @4* F' &4-' +5' -A5' 5??' '&:' '&5F' -4' A'?' 1* 5(' 26-51' A2$'&G' -2?-5F' -A5' +'--51&5??' 46' 2&.

1' ' $ > ' -' &&&J'## A' ## A '8 + &# ' ' 0 8 ' $ #$ $' +' ## #0' JJ#J'&$-' H#+'* ')2A)4

c' V*1'-2(' '+'$''' :2D' JJ''

= 8 ' '

21:AC' &' A'?' 15D C(' -A5156415(' 26-51' +1'56 C' 5JD15??B '&G' 2' F5:5&-' 15G15-' 2-' -A5' *&-'E UC' F52-A' 46' A'?' ?4&.'&. 2@(' 2&F' A'?' *&F4*+-'&G' :4&6'F5&:5' '&' -A5' 4C2 -C' 46' -A5' 2?-' '2&?' -4' -A5'1' M*55&(' A'?' F2*GAB -519' A5' D1*F5&- C' '&-'E 2-5?' -A2-' A5' 15-2'&?' &4-A'&G' +*-' H'&F C' 15:4 5:-'4&?' 46' A'?' 2&:'5&-' ?*+,5:-?(' 2&F' D14E'?5?' -4' *?5' 2 ' D4??'+ 5' F5?D2-:A' '&' 2F,*?-'&G' -A5' 2662'1?' 46' 2D 5?(' -A2-' A5' E2C' 2G2'&' 15-*1&' -4' -A5E 9

6-51' -A'?(' -A5' H'&G' 15?*E5F' A'?' $4C2G5(' 2&F' A2$B '&G' -4*:A5F' 2-' ?5$512 ' D 2:5?' 4&' -A5' :42?-(' '&' 2 ' @A':A' A5' @2?' 15:5'$5F' @'-A' G152-' 5&-A*?'2?E(' 21B 1'$5F' +5641 5' -A5' :2D'-2 ' 46' A'?' &5@' F4E'&'4&?' '&' -A5' 2--51' D21-' 46' :-4+51' ' @515' 2&J'4*?(' ?2C?' -A5' G152-' *?:2&' A'?-41'2&' 46'-A5'-'E5(' -4' +5A4 F' -A5' D1'&:5' ' @A4' A2F' 2:M*'15F' 2' E'GA-C' 15D*-2-'4&' -A14*GA4*-' *14D5' 641' A'?' $':-41'5?' +4-A' 4$51' A1'?-'2&' 2&F' &6'F5 (' 2&F' @A4?5' &2E5' @2?' 5$51C@A515' 15$515F' 641' -A5' @'?F4E' 2&F' 5M*'-C' @'-A' @A':A' A5' A2F' 1* 5F' '&' A'?' 4@&' H'&GF4E ' A5C' 44H5F' -4' A'?' :4E'&G(' -A5156415(' 2?' 2&' 5$5&-' 612*GA-' @'-A' 'ED41-2&:5(' &4-' E515 C'-4' 2D 5?(' +*-' -4' 2 ' -2 C(' @A515' A'?' D51?4&2 ' D15?5&:5' 2&F' 2*-A41'-C' E'GA-' F4' ?4' E*:A' -4' A52

I' ' ' #& ' $' +' ========!')) I) '') + * ' 23) A'9 *##"$' $' /' 0 ' ' ' '#' 2:1CE2?
'#' $ '2@E ' A' ' $ >' &4& ?D4&-5 :2F5&-5?
- ' -# ' -' &&&J'##' A' ' ' 66*F'-N.' G5E'-*?M*5 5JD15??'-
8 + &# '* 'B3' B5')2 D5:-415 ?5-4(
?$ ' G ' G '" /# $ /' 4&' 2'-51' E2&'65?-?D*-2&?' 2+?.'
+ &?' 0>' $-- >#' '* ' ?#+' ?' :4&F515 E5&-'?
- # ' ' ' *' &$ ' '$' 2*F'2(M*2E' 2:1CE'?I
+ G?$' #+#$' &&$ # '_ A21?2 '2('+' 'J

5J'?-'&G 65*F?(2&F 5?-2+ '?A D51E2&5&- -12&M*' '-C 9 A5 52D4 '-2&?U '& D21-':* 21(@A4?5 2 5G'2&:5(2? @5 A2$5 E415 -A2& 4&:5 A2F 4::2?'4& -4 4+?51$5(@2? 12-A51 2 -12&?6512+ 5 :4EE4F'-C(@515 '&-4J'B :2-5F @'-A ,4C 2- A'? 211'$2 A5 E+?- ?D 5&F'F D15D212-'4&? @515 E2F5 641 A'? 15:5D-'4& 6 55- 46 -@5&-C $5??5 ? 46 @21 :2E5 4*- -4 E55- A'E 2&F :4&F*:- A'E''&-4 D41-M 2&F(2? A5 -4M:A5F -A5 ?A415? 46 A'? &5@ F4E'&'4&?(-A5 2'1 @2? 15&- @'-A 2:: 2E2B -'4&? 46 -A5 D54D 5(2&F @'-A -A5 -A*&F51? 46 21-' 51C 614E -A5 641-15??5? @A':A :14@&5F -A5 A5'GA-? 46 -A5 :'-C(2&F 614E -A5 G2 2&- &2$C @A':A 14F5 '& A51 @2-51? 6

A5 62'-A6* :A14&': 51 46 4? 2 2:'4?(@A4 G5&5B 12 C 466':'2-5? 2? -A5 E2?-51 46 :515E4&'5? 4& -A5?5 4::2?'4&?(F' 2-5? @'-A G152- :4ED2:5&:C 4& 2 -A5 :'1:*E?-2&:5? 46 -A5 :5 5+12-'4&(5$5& -4 -A5 E'&*-B 5?- F5-2' ? 46 -A5 :4?-*E5 @41& +C -A5 H'&G 2&F A'? &4+' '-C :::41F'&G -4 A'E(-A5 E4&21:A @2? 2112C5F '& 2 4&G(6 4@'&G E2&- 5 46 :1'E?4& $5 $5-('&5F @'-A ?2-'& 46 -A5 ?2E5 :4 4*1 &'A'? A52F @2? 2 + 2:H $5 $5- +4&&5-(G21&'?A5F @'-A 2 15?D 5&FB 5&- 1*+C(2&F 2 D521 46 '&5?-'E2+ 5 D1':5 5 14F5

I U $&& # #$ # - 2F(A '# ** $' & " * / # 8#$ #0 JJJ &$- # = & # # #$ # ' $0# - -# # /# - / K$ / , $ # $'$*$+$ & # #$ # # = +$ &? $' & # " $ "# = &#$ &? # + #' - 42 A P = #K#$ $, # # $ " ' +$ # : # : # -- $+% # V 8 #&&#$ /# # F)3 F)5 A= +0 : # # = /($ + #' - 42 A K#$ $ #0 '##

2 &4+ 5 @A'-5 :A21G51(@A4?5 +*1&'?A5F :2D21'?4&? F2LL 5F -A5 5C5 @'-A -A5'1 ?D 5&F:U*1 C +'? ?'F5 @2? A'? C4*&G M*55&(E4*&-5F 4& 2 E ' H.@A'-5 D2 B 615C(2&F @521'&G 2 ?H'1-(41 *&F51 G21E5&-(46 1':A +14:2F5(2&F 2 15&:A 14+5(?'ED C 62?-5&5F @'-A : 2?D?(41 44D? 46 6'&5 @14*GA- G4 F

& -A5 E4 5 -A5C @515 15:5'$5F +C -A5 152- 2D-2'&(@A4(?*114*&F5F +C A'? G*21F 46 A2 +51B F'51?(2&F A'? ?' H5& 2112C 46 D2G5? @521'&G A'? F5B $':5(F'?D 2C5F 2 -A5 D4ED 2&F E2G&'6':5&:5 46 A'? A4*?5A4 F 6-51 D2??'&G *&F51 2 -1'*EDA2 21:A(@A515 51F'&2&F?@415 -4 15?D5:- -A5 '+51-'5? 2&F D1'B $' 5G5? 46 2D 5?(-A5 14C2 D2'1 E4$5F 641@21F *&F51 2 G41G54*? :2&4DC A4E5 +C -A5 E5E+51? 46 -A5 E*&':'D2 '-C(@A' 5 -A5 15'&? 46 -A5'1 ?-55F? @515 A5 F +C ?4E5 46 -A5 D1'&:'D2 &4+ 5? 6-51 -A5E 64 4@5F -A5 4-A51 41F? 2&F :2$2 '51? 46 -A5 H'&GB F4E(@'-A -A5 :51GC(2&F 2E+2??2F41? 2??5E+ 5F 614E 5$51C D21- 46 -2 C 2&F *14D5(+521'&G :4&G12B -* 2-'4&? 2&F D15?5&-? 614E -A5'1 15?D5:-'$5 :4*1-? ? -A5 D14:5??'4& A2 -5F '& -A5 $21'4*? M*21-51? 46 -A5 :'-C('- @2? G155-5F @'-A ,4C4*? +*1?-? 46 E*?':614E 2 +1' '2&- 2??5E+ 2G5 46 H&'GA-? 2&F 2F'5?(@A4 F'F A4E2G5 +C H&55 '&G F4@& 2&F ?2 *-'&G -A5 A2&F? 46 -A5'1 &5@ ?4$515'G&? - 5&G-A(26-51 F56' '&G -A14*GA -A5 D1'&:'D2 ?-155-? 2&F ?M*215?('- 152:A5F -A5 G152- :2-A5F12 (@A515 -A5 F2C @2? F5$4*-C :4?5F @'-A ?4 5E& D12C51 2&F -A2&H?G'$'&G 9

I +$ / K 6# & $- - A 8$ #0$> + - / 6# && J A 9 # $ $ + '# #0 #0 &$- #J '## &$- A P '# 0#

51F'&2&F' @2?' -44' ?5$515' 2&' 5:4&4E'?-' 46' -'E5' -4' @2?-5' '-' @' '&G C' 4&' 'F 5' D4ED' 2&F' :515E4&'2 ' '?' A521-' ?@5 5F' @'-A' ?2-'?62:-'4&(' A4@5$51(' 2?' A5' G2L5F' 4&' -A5' E2G&'6':5&-' :2D'-2 ' -A*?' 2'F' 2-' A'?' 655-(' 2&F' D4*1'&G' 641-A' -A5' E4?-' '$5 C' 5JD15??'4&?' 46' 2' 4C2 -C' @A':A' 46' 2-5' A5' A2F' +55&' 5F' -4' F'?-1*?-' '-A' 2 ' A'?' 'ED2-'5&:5(' -A5156415(' A5' @2?' &4-' F'?B D4?5F' -4' 15+*H5' -A'?' ?D'1'-' +C' 2+1'FG'&G' -A5' ?52?4&' 46' A' 21'-C' +*-(' 26-51' 2 4@'&G' ?*66':'5&-' ?:4D5' 641' '-?' '&F* G5&:5(' A5' F5$4-5F' A'E?5 6' 2??'F*4*? C' -4' -A5' G152-' D*1D4?5?' 46' A'?' $'?'-

5' ?*EE4&5F' 2' D21 '2E5&-' G5&512 ' 46' -A5' H'&GB F4E(' @A515(' 26-51' A'?' 4@&' 15:4G&'-'4&(' 42-A?' 46' 2 5B G'2&:5' @515' -5&F515F' -4' A'?' F2*GA-51')42&&2' 21'F' A51' D4?-51'-C(' 2?' A'g' ?*::5??41?(' @'-A4*-' 2&C' 2 *?'4&' +5B '&G' E2F5' -4' -A5' 1'GA-?' 46' A'?' @'65' A'?' @2?' 2' :521' 5$2?'4&' 46' -A5' -152-C' @'-A' 12&:5' +*-' 51F'&2&F(' -A4*GA' 2-5(' @2?' -44' ?5&?'+ 5' 46'-A5' 64 C' 46'-A2-' ?-'B D* 2-'4&' @A':A' ?5:*15F' -A5' 15$51?'4&' 46' A'?' @'650?' F4@51' -4' -A5' 2--51' :14@&' -4' 2 4@' '-' -4' 15:5'$5' 2&C' ?2&:-'4&' 614E' -A5' 52D4 '-2&? 9

&4-A51(' 2&F' ?:21:5 C' 5??' F'?2?-14*?' D14$'?'4&' 46' -A5' -152-C(' A5' :4ED '5F' @'-A' '&' +5--51' 62'-A' A'?' @2?' -A5' 155?-2+ '?AE5&-' 46'-A5' &G5$'&' D14D1'5-41?' '&' -A5'1' 2&:'5&-' 5?-2-5?' -A5' G152-51' D21-' 46'@A':A(' 2?' 2 152FC' &4-':5F(' A2F' +55&' D21:5 5F' 4*-' 2E4&G' A'?' 4@&' 64 4@51?(' +4-A' D2&'21F?' 2&F' -2 '2&?' -' @2?(' 46' :4*1?5(' 2' @41H' 46' 5J-1241F'&21C' F'66':*-C' 2&F' $5J2-'4&' A5&' 2&C' 6 2@' 41' 'ED5F'E5&-' :4* F' +5

I' 9 # $ 0# - A 8 #&&#$ /# #' +'#'' DD((

12'?5F '& -A5 &G5$'& -'- 5F -A5 -12&?651 @2? 5$2F5F @A5& '- :4* F &4-(2 G12&- 46 4-A51 2&F 41 E 4&5C @2? ?*+?-'-*-5F('6 D4??'+ 5 E 415 615M*5&- C(A4@B 5$51(-A5 5M*'$2 5&-(@A':A D14+2+ C @2? &4- $51C ?:1*D* 4*? C E 5-5F 4*-(@2? 4+ 'G5F -4 +5 -2H5& +C -A5 12G4&5?5 D14D1'5-41 4 2::4ED '?A -A'?(-A5 H'&G @2? :4ED5 5F -4 F12@ 21G5 C 4& -A5 14C2 D2-1'E4&C '& 2D 5?(2? @5 2? -4 E2H5 '+512 2DB D14D1'2-'4&? 46 2&F 2&F 15&-? '& A'? &2-'$5 F4E'B &'4&? ? 2 -A'? D14$5F '&?*66':'5&-(A5 @2? F1'B $5& -4 -A5 5JD5F'5&- 46 15D 5&'?A'&G -A5 5J:A5M*51 +C F12*GA-? 4& A'? &5@ ?*+,5:-? 9

A5 15?* -(2 -A4*GA 5665:-5F @'-A4*-' $'4 5&:5 419 F'?41F51(@2? *&?2-'?62:-41C -4 2 D21-'5? A5 &. G5$'&? 1215 C 15:5'$5F -A5 6* 5J-5&- 46 -A5'1 F5B E2&F? A5 4C2 D21-'?2&? 46 12G4& ?2@ -A5 61*'-? 46 E2&C 2 A21F.64*GA- +2-- 5 ?&2-:A5F 614E -A5'1 G12?D(-4 +5 G'$5& +2:H 2G2'& -4 -A5'1 5&5E'5? 6 2?- C(-A5 @15-:A5F 52D4 '-2&?('&?-52F 46 -A5 62B $4*1? 2&F 'EE*&'-'5? '&:'F5&- -4 2 &5@ 15'G&(64*&F -A5E?5 $5? +*1F5&5F @'-A 2FF'-'4&2 'ED4?-?(@A':A('& -A5 5JA2*?-5F ?-2-5 46 -A5 :4*&-1C(@515 D5165:- C '&-4 512+ 5 4 ?44& @515 -A5 62'1 5JD5:-2-'4&? 641EB 5F 46 51F'&2&F0? :4E'&G('H5 E4?- 4-A51 '&F56'&'-5

I 8#$ 2 /# $- # , G$ *? ? : ? #0 HHH &$- # A + + $+0$ $/ !$? , #J #& /# $- + =#' #0 '# $ $ /' ? ? $ &$- : A $&& #' -' 2F5 A *? ? $/' $&& /# " 8 #&&#$ /# # + #' -')2 $ #$ $ / $' /' L -' *:A(641 5J2ED 5(@2? -A5 -$# ?# 0 D * 0> 6-'-5 46 -A5 F4*GA-C '-- 5 :2$2B / #'# " ? $/ *' $ & $# # '51(5F14F5 2 2L(-A5 G2 2&- ? '$ 6# / -$ $ 1 5C$2(?4 :55+12-5F '& -A5?*+B + ## #0 JJ#J &$- #'

5JD5:-2-'4&?(: 4*F5F 4$51 +C F'?2DD4'&-E5&- 2&F ?*:A @515 ?4E5 46-A5 +'--51 61*'-? 46-A5 F'?G12:56* -152-C @'-A 4*'? Z 9

I *$ > G /$- L
* & - &#+ * ? # +-? *
> '?#+& +-$? # L
+# $0 - #J# # *9 # $G# ?
$ #$ $G? # ? ?# - # *
6# $ $ #' ? $ +0 /# /? ?
*$& $ /-# # * ?# - / L

& G# ? &$ & > $ > $ $L
$' ?$ *" $ '& / L
$ # # ? ?# G $ -$
$ /? $ + # /#& # # #
, # $ $ " $ $ +# $& # # #
G$> $? * +#

L ;

=

' Z Z

& ' ' ( ) * ' 3

6 ' '

< > <

,) ' 51F'&2&F' @2?' -A*?' 4::*D'5F' '&' 2D 5?(' -A5' 15D15?5&-2-'$5?' 46' E4?-' 46' -A5' :'-'5?(' ?* E E4&5F' +C' -A5' D14$'?'4&2 ' G4$51&E5&-(' A2F' 2??5E+ 5F' '&' *1G4?(' 4$ ' < ' 56415' 5&-51'&G' 4&' +*?'&5??(' -A5C' @515' F5?'14*?' -4' 4+-2'&' -A5' M*55&0?' ?2&:-'4&' -4' -A5'1' D14:55F'&G?' ' :4 E E '--55' @2'-5F' 4&' A51'641' -A2-' D*1D4?5(' +*-' ?A5' 4+?-'&2-5 C' 156*?5F' -4' G'$5' -A5E' 2*F'5&:5 9

A5' ?-' ' :4&-'&*5F' D *&G5F' '&' E44FC' E5 2&:A4 C(' 5JA'+'-'&G(' A4@5$51(' 4::2?'4&2 C' -A5' @' F5?-' 6152H?' 46' '&?2&'-C ' 4@21F?' -A5' 2--51' 5&F' 46' 5:5E+51(' ?A5' F5-51E'&5F' -4' 52$5' *1G4?(' 2&F' 15E4$5' A51' A*?+2&F0?' 15E2'&?' -4' -A5'1' 6'&2 ' 15?-'&G.D 2:5' '&' 12B &2F2 ' A5' '&?'?-5F' 4&' ?55'&G' -A5E' A51?5 6(' +56415' A51' F5D21-*15 ' A5' 15E4&?-12&:5?' 46' A51' :4*&?5 B 41?(' 2&F' -A5' A4 C' E5&' 46' -A5' E4&2?-51C' 46' '126 415?(' D14$5F' 5M*2 C' 61*'- 5?? ' DD4?'-'4&' 4& C' 14*?5F' A51' D2??'4&?' '&-4' 615&LC(' 2&F' -A5C' @515' 4+ 'G5F' -4' :4E B D C' @'-A' A51' E2F' A*E4*1? ' A5' :41D?5' @2?' 15.

0I' $#$ $' 6# ' / ' -' #$' $ ' / ' $"' + ' '#' + '##' #0' JJ#J ' &$-## A 9 =' #0' '##' &$-' JJ#J

0 ' ! ' ' ' =<

E 4$5F' 614 E' -A5' $2 * -' -A5' -@4' :466'&?' 46' 52F' 2&F @44F' @515' 4D5&5F(2&F' ?*:A' 2?' :A4?5' G2L5F' 4&' -A5' E 4 * F51'&G'15 ':?(@A':A(&4-@'-A?-2&F'&G'-A5'1'A2$'&G' +55&' 5E+2 E5F(5JA'+'-5F' ?:21:5 C' 2' -12:5' 46' A*B E 2&'-C' A5' M*55&' @2?' &4-' ?2-'?6'5F' -' ' ?A5' -4*:AB 5F' -A5E' @'-A' A51' 4@&' A2&F(@A':A' ?A5' F'F' @'-AB 4*-' ?A5FF'&G' 2' -521(41' -5?-'6C'&G' -A5' 52?-' 5E4-'4&' A5' *&641-*&2-5' 2FC('&F55F(@2?' ?2'F' &5$51' -4' A2$5' +55&' ?55&' -4' @55D' ?'&:5' ?A5' F5-5:-5F' A51' A*?B +2&F0?' '&-1'G*5' @'-A' -A5' 5E'?A' :4*1-5?2&

A5' +4FC' @2?' -A5&' D 2:5F' 4&' 2' E2G&'6':5&-' :21(41' A521?5(F12@&' +C' 64*1' A41?5?' -' @2?' 2::4ED2B &'5F' +C' 2' 4&G' -12'&' 46' 5:: 5?'2?-':?' 2&F' &4+ 5?(@A4(-4G5-A51' @'-A' -A5' M*55&(56-' -A5' :'-C' 4&' -A5' &'GA-' 46' -A5' ; -A' 46' 5:5E+51' A5' E2F5' A51' ,4*1&5C?' +C' &'GA-(?2C'&G(-A2-' R' 2' @'F4@(@A4' A2F' 4?-' -A5' ?*&' 46' A51' 4@&' ?4*(?A4* F' &5$51' 5JD4?5' A51?5 6' -4' -A5' 'GA-' 46' F2C K' A5&' ?A5' A2 -5F(-A5' +4FC' @2?' F5D4?'-5F' '&' ?4E5' :A*1:A' 41' E4&2?-51C(@A515' -A5' 6*&512' ?51$':5?' @515' D51641E5F(2?' '6' A51' A*?+2&F' A2F' ,*?-' F'5F0' 2&F' 2' :41D?' 46' 21E5F' E5&' H5D-' :4&B ?-2&-' G*21F(:A'56 C(2?' '-' @4* F' ?55E(@'-A' A5' $'5@' 46' D15$5&-'&G' 2&C' 65E2 5' 614E' D1462&'&G' -A5' D 2:5' +C' A51' D15?5&:50' 641')42&&2' ?-' ' 15-2'&5F' -A5' ?2E5' ,52 4*?C' 46' A51' ?5J(@A':A' ?A5' A2F' *&A2DD' C' ?4' E*:A' :2*?5' -4' 655' F*1'&G' A' 'D0?' '65-'E5 9

&' 2' ?*+?5M*5&-',4*1&5C(@A5&' 2-' 2' ?A41-' F'?-2&:5

I' ' $ > ' - ' -# ' ' '$ ' 2@EB A +$ / K' -'&&&JJ#' ' &&&JJJ##' &&&JJJ#J' 6# ' ' &$-'&&'#' A' 0 &&& J### A $ #$ $' '##' #0' :#/$' / ' H#+ '&$-'J'## JJ#J' &$-'### A $ 0$!$ ' $= R' ## /# ?' $' G$' ?' $** =

614 E 41M*5 E 2F2(?A5 41F515F -A5 :41D?5 -4 +5 :21B
1'5F '&-4 -A5 :4*1-.C21F 46 2 :4&$5&-(4::*D'5F(2?
?A5 ?*DD4?5F(+C E 4&H? A5 @2? 6' 5F @'-A A41B
141(A4@5$51(4& 6'&F'&G '- 2 &*&&51C(2&F 'E E5F'B
2-5 C :4 E E 2&F5F -A5 +4FC -4 +5 15 E 4$5F '&-4 -A5 4D5&
6'5 F? 515 ?A5 5&:2 E D5F @'-A A51 @A4 5 D21-C 2-
F52F 46 &'GA-M &4-(A4@5$51(*&-' ?A5 A2F :2*?5F
-A5 :46 '&? -4 +5 *&?52 5F(-A2- ?A5 E 'GA- ?2-'?6C A51B
?5 6 46 -A5 ?265-C 46 A51 A*?+2&F0? 15 ':?M 2 -A4*GA
'- @2? $51C F'66':* - -4 H55D -A5 -41:A5?(F*1'&G -A5
-'E 5(614 E +5'&G 5J-'&G*'?A5F +C -A5 $'4 5&:5 46 -A5
@'&F?(2&F 52$'&G -A5 :4 E D2&C '& -4-2 F21H&5?? 9

V $> ?$+ ! *
P $ $' * ? ? 0$ / ? /#/
$ 0 $ &$
? 0 /> 0 + ' /* +' ?
- &? $* # G$ 0 # /
$ / 0 "? ? $-$ +
? & '# # / ? - &?
$ / $* $** & # $ > "$K# "
? ?& - G$ - $/ /
D 0 + ?$' $/ $ $ G# ?
&$? $? # # * ? #" * $ / V -$# '$ /
"$ G ## - F3) $0
>& . 7? ' G# $D ? 0 J$+# ? $ L
? # # G# - 0$0 > *# /
?$+ + &? + $&& L
$ '# ? +$?$?# - L
/ & 0 # / /
/ $G $ " > * +' ? -# *
$ > ? ?0 ' &? * ?# - # / G?#&? ?# & # #& $--$ > ?$ & / ? ' > -$" - & /# "? $ # G?#&? ? ? $J 0 L G# ?# $&& $&> G *# /?#+

?D52H'&G 46 A215? 2? -A5 15'G&'&G E4&21:A 46 12&:5M 2& 51141 &4- E515 C :51':2(?'&:5 '- '? 15D52-5F &4 5?? -A2& -A155 -'E5?* :A E'?-2H5? @4* F +5 -44 -1'$'2 641 &4-':5 '& 2&C +*- 2& 2*-A41 @A4 A2? E2F5 ?'E' 21 4&5? -A5 G14*&F 641 *&?D21'&G :4&F5E&2-'4& 46 4-A51?

9 21-C1(5D ::: JJJ'J
644 '?A 21-A*?'2& E4&H(R 5$?':: 4 64 '4 5$'41(K -4 +41B 14@ 21-C1? @41F?(-A4*GA E415 H&2$5 -A2& 644 D14+2+ C(6' 5F 42&&2)@'-A 2+?*1F A4D5? 46 A51 A*?+2&F0? 15-*1&'&G -4 '65(@A':A(A5 2??*15F A51(A2F A2DD5&5F(2? A5 A2F 152F(-4 2 :51-2'& D1'&:5 26-51 A5 A2F +55& F52F 64*1-55& C521?' ? A' 'D @2? RF'?5E+4@5 5F(A5 @2? A21F C '& :4&F'-'4& 641 ?*:A 2& 2*?D':'4*? 5$5&-' A5 M*55&(A4@5$51(?55E? -4 A2$5 +55& :2*GA- @'-A '- / D*? D'?- 5D ::: JJ$''' 7 21-C1 4?5? 2

A5?5' E 2F' D12&H?(?2$4*1'&G' 46' 2+?4 *-5' 'F'4:C(@515' 4::2?'4&2 C' :A5M*515F' +C' 4-A51' 2:-?' 46' E415' '&-5 'G5&:5(+*-' &4-' 5??' ?-21- '&G ' A5' A2F' 521 C' ?A4@&' 2' F'?G*?-' -4' A51'62-A510?' 4 F' :4*&?5 41?(2&F' 5?B D5:'2 C' -4' Z'E 5&5?(@A4(?A5' -A4*GA-('&-516515F' -44' 2*-A41'-2-'$5 C' '&' A51' F4E5?-':' :4&:51&?' 56415' 52$'&G' *1G4?(A4@5$51(?A5' 5 5:-1'6'5F' A51' A*?B +2&F0?' 2FA515&-?(+C' 15$4H'&G' 2 ' G12&-?' E 2F5' +C' -A5' :14@&' ?'&:5' ?2+5 20?' F52-A ' A'?(2 E4?-' -A5' 4& C' 2:-' ?A5' @2?' 5$51' H&4@&' -4' ?'G&(@2?' 2' ?5$515' + 4@' -4' -A5' :4*1- C' -1'+5' 46' ?C:4DA2&-?' 4&' @A4E' -A5' G4 F5&' 62$4*1?' 46' -A5' 2-5'15'G&' A2F' +55&' ?4' D14F'G2 C' ?A4@B 515F' -' -A5' ?2E5' -'E5' ?A5' 15641E5F' A51' D'0'$C' :4*&:' (+C' F'?E'??'&G' -A5' D15?5&-' E5E+51?(2&F' 15B '&?-2-'&G' -A4?5' 2DD4'&-5F' +C' A51'14C2 ' E4-A51(?21B :2?-':2 C' -5 '&G' 4&5' 46' -A5' 5,5:-5F' :4*&?5 41?(-A2-' R' A5' E'GA-' G4' 2&F' :4ED 5-5' A'?' ?-*F'5?' 2-' 2 2E2&B :2 K' A5' 15E21H' A2F' 2' +'-'&G' 5FG5' -4' '-(2?' -A5' @41-AC' ,*1'?-' @2?' 15D*-5F' ?4E5@A2-' 4@' '&' A'?' ?:A4B 21?A'D 9

A5?5' D21-'2 ' G 52E?' 46' '&-5 'G5&:5(F'15:-5F' '&' -A'?' D5:* '21' @2C' -44(5F' E2&C' -4' F'?:51&' -A5' ?5:15-' '&6 *5&:5' 46' A51'62-A51' A5' ?-' (A4@5$51(D51-'&2.

-$ # & '$ ' ? '# ' # ' *' ?# ' ! & ' G# ? ' $' +# ' ' # ' R'0 $& '& & $ [' $ '? '&$ ' -$ #& $ ' ?# ' G?#+ #&$' -# ' ?#+' # ' ?# '$0 +# $0 ' $ # ' $ ' '?# ' /' * # / ' ? ' &?0# ? -' G ' $ ' $ ' ? ' +$/ - $ D ' *' *' 8 $ $/$' -# '&&&JJJ### ? ' , ' $ /' ? ' #/#& ']' $ #$ $' + '## ' #0 'JJ#J ' *#" ' G?#&?' ? ' $ /' ? ' ? ' &$- ### A 9 # $' + '#' #0 '##' " $' ' - $" ' *' ? ' & ' &$- ' JJ '#' JJJ '# #' #' ' A ' ' G ' & + - /' ' +$D ' ' ? ' 8 + &# ' ' 0'8 'H#+ ' &&$ # ' ' # ' #+ - #0 ' ' * ')F' A 'E* / '$ ' 6# ' / ' $/' ?# ' P +#$/ ' ' ? ' 0L $ ' : ' + '#' - ' 22

J 0 !

U:'4*? C 156*?5F -4 ?2&:-'4& 2&C E52?*15?7 46 :41-57 641 A'?7 15:2 (2&F @A5& D15??5F +C -A2-' +4FC 4& -A'?7 2&F 4-A51 E2--51?(2-' 2& 2*F'5&:5 @A':A ?A5 G12&-5F +56415 52$'&G *1G4?(?A5 D 2'& C -4 F -A5E -4 R 15B -*1& -4 -A5'1 M*21-51?(2&F &4-' -4 E5FF 5 6*1-A51 '& -A5 D*+ ':' +*?'&5?7 @'-A4*-' A51 5JD15??7 :4E E2&F? K 4-' 4&G 26-51 -A'?(-A5 5G'? 2-*15 @2?7 D1414G*5F +C -A5 14C2 ' :4*&:' 641 64*1 E4&-A?

A5 -51E 2??'G&5F 641 -A5 D14$'?'4&2 ' G4$51&E5&-' 5JD'15F '& 5:5E+51(2&F @2?7 &4-' 15&5@5F ' 4 4-A51 15G5&:C @2?7 2DD4'&-5F +C -A5 &4+ 5?7 2&F -A5 H'&GF4E @'-A4*-' 5$5& -A5 ?A2F4@7 46 D14-5:-'4& 26B 641F5F +C '-?7 :41-5?(2&F @'-A &4 4-A51 G*'F5 +*-' '-?7 :12L,1 ?4$515'G&(@2?7 56-' -4 F1'6-' 2-' 12&F4E 2E'F?-' -A5 @'&F?7 2&F @2$5?7 46 62:-'4& A'?7 @2?7 &4-' ? 4@7 '& G2-A51'&G 614E 5$51C M*21-51(@'-A -A5 2'F 5?D5B :'2 C 46 -A5 4$51G14@& &4+ 5?(@A4?5 ':5&?5 4& ?*:A 4::2?'4&?7 2?7 -A'?7 D14$5F -44 D 2'& C -A2-' D*+ ':' -12&B M*' '-C @2?7 &4-' 64*&F5F ?4 E*:A 4& -A5 ?-2+' '-C 46 2@(2?7 4& -A5 D51?4&2 ' :A212:-51 46 -A5 15'G&'&G ?4$515'G& 9

I 0$ &$ + ## JJJ &$- J='# A $ > - -# '&&&J '# A 9 # $ #0 '## &$- JJJ'#A JJJ'### A 9 #"$ L $ / ' $## 2@E) A =' $ / K &$- &&'# ? D *' /# $ #/ #$ *' ? 0 +$ G? 0 ? $0 '$ -$ # ? 8 $=' $/# G$ + /' $ $ " * & 0>' $ /' $ /' $ * ' ? & ' > *' ?# $ &# -$ #L + >' *' 8#0 $ $ A' $0 $'

?#"?= -# # /' * # / ' ? $ L &?# *' >$ - ? *$? ? $/' *' $ 0 />' *' - G# ?7 0 && / # "' ? ? 0$ /' # $ /' $L 0 # ? /' ? *# ? ' "* L *' " '#$ G?#&?7 ?# #-'?$/' $ * /' $ $ L > -# & J ### A $ / $&# &$- & '## . $+ /' ? '&# & + $ & V' $> '# / ? $ &?# & /' ? #* ' "'$* ?#

A5 H'&G0? 5&5E'5?('& -A5 E52& -'E5(@515 D15??B '&G -A5'1 :4115?D4&F5&:5 @'-A -A5 ED5141 2J'B E' '2&(2&F *1G'&G A'? 'E E5F'2-5 D15?5&:5 '& D2'& -A51? F5$'?5F ?:A5E5? 641 E211C'&G -A5 D441 M*55& -4 -A5 C4*&G *H5 46 2 2+1'2U6:41 ?4E5 4-A51 D1'&:5 @A4?5 C5217 41 '&:2D2:'-C E'GA- 5&2+ 5 -A5E -4 2:- 4$51 2G2'& -A5 621:5 46 T'&G A' 'D 4 2FF -4 -A5 -14*+ 5? 4::2?'4&5F +C -A'? E5?A 46 '&-1'G*5 2&F 62:B -'4&(-A5 :4*&-1C(@A':A 46 2-5 C521? A2F ?*66515F 614E ?:21:'-C(@2? $'?'-5F +C 2 D5?-' 5&:5 -A2- 65 E4?- A52$' C 4& -A5 ?4*-A & 5$' 5 2 4&5(51. &2 F5L 15D41-? -A5 '&:15F'+ 5 &*E+51 46 (D51B ?4&? -4 A2$5 62 5& $':-'E? -4 '- 9

*- 2 -A4*GA -A5 ?-41E @2? -A*? F21H5&'&G 614E 5$51C M*21-51(-A515 @2? &4 G5&512 5JD 4?'4&(-4 ?A2H5 -A5 ?-2-5 -4 '-? 64*&F2-'4&?(2? '& -A5 -'E5 46 5&1C 1F51 C A2+'-?('6 &4- D1'&:'D 5?(A2F +55& G12F*2 C 641E5F *&F51 -A5 4&G 15'G& 46 ?2B +5 2 A5 G152- E2?? 46 -A5 D54D 5 A2F 521&5F -4 15?D5:- -A5 4D512-'4&(2&F 2DD15:'2-5 -A5 +5&56'-? 46 2@ 2&F &4-@'-A?-2&F'&G -A5 E5&2:'&G 2--'-*F5(-A5 +*?- 5(2&F -12&?'-41C 5+* '-'4&? 46 -A5 1'$2 62:B -'4&?(-A515 ?55E5F 2 E2&'65?- 15 *:-2&:5 -4 +152H *D -A5 5?-2+ '?A5F 41F51 46 -A'&G?(2&F(+C F55F? 46

$ $0 #J >> $ *$" 6 ? 0$ / ? "? + &? / '#' /? ; # & $" $ $ 2 , # & 2 /#$

6# / > $ &$-'&&'###'A '8 + &#- * 0 JJ# A $ #$ $ + ## #0 JJ#J &$-'##

? G ?>& $ * $L $&# / ' &?* ?# JL $&'$+ #+'* +?# G D GL /" 6 $? G ' ?$ 2)E /# / *?# G # -$ # ? *@EE - $ /? $ G> &$- /G# ? #*?#+L *$* $ ' $ $&D 0# - $

= ' '

$'4 5&:5 2&F + 44F?A5F(-4 15&5@ -A5 F2C? 46 2&:'5&- 2&21:AC

:A 46 -A'? G44F 15? - @2? *&F4*+-5F C -4 +5 2--1'+*-5F -4 -A5 $'G414*? :4*&?5 ? 2&F :4&F*:- 46 Z'125&5?(9 @A4(-4G5-A51 @'-A -A5 G12&F :4&?-2+ 5 2&F -A5 *H5 46 $2(A2F 15:5'$5F 6* D4@51? 614E 51F'&2&F -4 2:- '& A'? &2E5 *:A '? 2 ?4 -4 +5 2?:1'+5F -4 -A5 D4 '-':' :4&F*:- 46 -A5 H'&G Q 21 614E 2& '&-5ED512-5 L52 -4 15?*E5 -A5 ?:5D-15 46 2?-' 5(A5 A2F ?A4@& -A14*GA4*- 2 F'?:155- 641+521B 2&:5 5 *?5F -A5 E4?- :4*1-54*? 2&F :4&F5?:5&FB '&G ?-C 5 '& A'? :4EE*&':2-'4&? -4 -A5 &4+ 5? 2&F -A5 E*&':'D2 '-'5?(5JD15??'&G A'? 5&-'15 :4&6'F5&:5 '& -A51 D2-1'4-'?E(2&F -A51 4C2 -C -4 -A5 M*55&(A'? F2*GA-51 A14*GA -A5 21:A+'?A4D(2&F 4-A51 'ED41-2&- 2G5&-?(A5 A2F -2H5& 5665:-*2 E52?*15? -4 ?46-5& -A5 4DD4?'-'4& 46 -A5 E415 :4&?'F512+ 5 41F?M *&-' 2- 5&G-A &4- 4& C ?*:A 2::4EE4F2-'&G ?-2-5?B E5& 2? 21:' 2??4 F5 2 5G2(+*- E415 ?-*1FC 4DD4B &5&-?(2? ' 5&2(5&2$5&-5(2&F 5,21(@515 +14*GA- -4 G'$5 '& -A51 2FA5?'4& -4 -A51 4 F E2?-51 '+512 D14E'?5?('&F55F(A2F +55& E2F5 +C -A5 5ED5141('&

I H#+ , #-- /$ /' -$#/ - G '$&& '?#+ *0 # "U$ ' *?#' G '* / ' $ "? $ ' + &?' + ' *$D# "? ?$ ' & - ' / ' ? ' #0 ' - L $* #$ V + ' '#' #0' '## &$- ' - ' *- & # "? ' , (' JJ#J .' 8 + K' ' ? '& $ >' - '0 ', # '$' + &?' ' L $& ' ' >' - # #&$'$& ' *?#' ' * &' / '0>'&? &D# "? ' L ?' - '-$ # # + ')E' 0 ' -# #' *' ? '" $ / .' $ '$ #0 .' ' ? ' +#J /' + #' ' &?' *'$? # >' G?#&?' ?#' *'$& # 'H#+ ' +#"?' - 0$L ?$ "?>' 0 />' & /' # ' 0 D' 0 >' ?$' ' 0 ' - KK /' ?#+ * 0 '&$-'J'## .' 9 # $'# L ' / +# '? G' + &?'0 " /' / /'G? ' ?# D ' ?' $ &?0# ? -' ' ' - # &#- ' $ /' ? G' + &?' ?$/'$' "' # ?'* ' ' #" ' ? ' ?

-A5 &2E5 46 A'? G12&F?4& A21 5?(@A4 A2F 2 152FC. +55& E2F5 -4 2??*E5 -A5 -'- 5 46 T'&G 46 2?-' 5 *- -A5 D14A''?5? 46 -A5 'ED51'2 +12GG21- D2??5F 'GA- C @'-A -A5 E415 :4&?'F512-5 2?-' '2&?(@A4 H&5@ A4@ 621 -A5C *?*2 C 4*-?-1'DD5F A'? D51641EB 2&:5(2&F @A4 65 -(4& -A5 4-A51 A2&F(-A2- -A5'1 -1*5 '&-515?-? @515 :4&&5:-5F @'-A -A4?5 46 2 D1'&:5 @A4?5 ?*D51'41 -2 5&-? 2&F D51?4&2 15 2-'4&? 2 :4&B :*115F -4 15:4EE5&F A'E -4 -A5 ?52- A5 A2F 4&:5 ?4 A4&4*12+ C 4::*D'5F A5 G152- E2?? 46 -A5 :4EE4& D54D 5(-44(&4-@'-A?-2&F'&G -A5 -5ED4121C 2 '5&2-'4& 46 -A5'1 655 '&G? 614E -A5 2-A4 ':H'&G +C A'? 15:5&- E211'2G5(@515 F1'$5& +C -A5 5$' ? -A5C 2:-*2 C ?*6B 6515F(2&F -A5 $2G*5 2DD15A5&?'4& 46 G152-51(-4 D21B -':'D2-5 '& -A5 ?2E5 ?5&-'E5&-?N ?4 -A2-('& 5?? -A2& 5'GA- E4&-A? 614E A' 'D0? F52-A(-A5 @A4 5 &2-'4& E2C +5 ?2'F -4 A2$5 15-*1&5F -4 '-? 2 5G'2&:5 -4 '-? 2&:'5&- ?4$515'G& A5 4& C :4&?'F512+ 5 5J:5D-'4&? @515 4&)*2& 2&*5 2&F -A5 *H5 F5 2,212N -A5 641E51 46 @A4E A2F G4&5 -44 621 -4 15:5F5(2&F -A5 2--51 D4??5??5F -44 :A'$2 14*? 41 -44 ?-*++41& 2 -5ED51 -4 F4 ?4

- 5&G-A -A5 2-A4 ':E4&21:A(A2$'&G :4ED 5-B 5F A'? 2112&G5E5&-? 2- 2D 5?(2&F @2'-5F *&-' -A5 2662'1? 46 2?-' 5 @515 6* C 1'D5 641 A'? 15-*1&(?5- ?2' 614E A'? -2 '2& :2D'-2 ( )*&5 =-A(< 5

I $ > - -# - 8 #&&#$ /# #'2 /($ +'#' &&& # A #& !* '& JJJ'##' -)B. / # $ 23E4 A L A $ K$' +'#' #0'#'&$-'JJ#' 0 :#/$' / 'H#+ '&$-'J'##'A' A'9 # $' +''#' #0''##' &$-' $ / '$ 6# / $: ' J#J' JJ##' HH:' JJJ' JJJ#J A +'#' -

=S ! D14D4?5F -4 -4*:A 2- -A5 5&45?5 D41- 46 2$4&2(@A515 2& '&-51$'5@ A2F +55& 2112&G5F +5-@55& A'E 2&F 4*'?Z *1'&G A'? 15?'F5&:5 '& 2D 5?(A5 A2F 2??'F*4*? C F5$4-5F A'E?5 6 -4 -A5 2662'1? 46 -A5 H'&GF4E 5 A2F 2$4'F5F 5&-51'&G '&-4 -A5 4:2 D4 '-':? 46 -2 C(156*?'&G 2 -152-'5? 2&F 2 '2&:5? D14D4?5F -4 A'E +C '-? $21'4*? ?-2-5?(@A5-A51 4665&B ?'$5 41 F565&?'$5 5 A2F 5$2F5F -A5 'ED41-*&2-5 ?4 ':'-2-'4&? 2&F 15E4&?-12&:5? 46 2J'E' '2& '& 15B G21F -4 -A5 2?-' '2& 15G5&:CN F5: '&'&G(E4154$51(2 D51?4&2 :4&6515&:5 D14D4?5F -4 A'E +C -A5 5ED5141 F*1'&G A'? ?-2C '& -2 C 6-51 -A5 G152- @41H 46 15?-41'&G -A5 &G5$'&? -4 -A51 5?-2-5?(A5 A2F -A4B 14*GA C 1541G2&'L5F -A5 '&-51'41 2FE'&'?-12-'4& 46 -A5 H'&GF4E N :152-'&G &5@ 466':5?(2&F 5&-'15 C &5@ F5D21-E5&-? 5 E2F5 21G5 15641E?(E4154$51('& -A5 :4*1-? 46 2@(2&F D15D215F -A5 @2C 641 -A5 &5@ ?C?-5E(F5E2&F5F +C '-? 15 2-'4&?(2? 2 F5D5&B F5&:C 46 -A5 D2&'?A E4&21:AC 2?- C(+56415 52$'&G -A5 :'-C(A5 2::5F5F -4 -A5 15M*5?- 46 -A5 '&A2+'-2&-? 641 -A5 155?-2+ '?AE5&- 46 -A1'1 2&:'5&- *&'$51?'-C 9

&2 -A5?5 ?2G2:'4*? E52?*15? A5 A2F +55& 2+ C 2??'?-5F +C A'? $':514C 4&?2 $4 F5 41F4$2 51B F'&2&F0? F5D41-E5&- -4@21F? -A5 2--51 A2F +55&

I 8#$ #$ /# $- / #&# # + #' - 3(<F / / #0 HHH &$- #A ' A + + ? $ / $- # $ &#'#L + #' #0 '#&$- ' A # 8#$ 0 $ + -?$ #& #& * 23) A $&& # #+ > ? " $ J& L #$ # - 2F5 A +$ / K & *? -$ # ? "# $ # & &&J A #" # $ * $- & &#

?-*F'5F(' 2?' ' A2$5' ?2'F(' -4' 5662:5' 5$51C' *&:4E641-B
2+ 5' 'ED15??'4&' 614E' A'?' E'&F' &' A'?' 6'1?-' 211'$2 ('
'&F55F(' -A5' H'&G' A2F' :4&F5?:5&F5F' -4' '?-5&' -4' :4EB
D 2'&-?(' E2F5' AC' :51-2'&' 466':51?' 46' -A5' 5J:A5M*51('
46' 4&?2 $40?' @2?-5' 2&F' E'?2DD ':2-'4&' 46'-A5' D*+ ':'
E4&'5?' A5' G5&512' ?'ED C' 2?H5F' 52$5' -4' D14B
F*:5' A'?' 4@&' 2::4*&-?' '&' A'?' F565&:5' A5' 6'1?-'
'-5E(' @A':A' A5' 152F' 2 4*F(' @2?' ; (' F*:2-?('
G'$5&' '&' 2 E?' -4' -A5' E4&2?-51'5?''2&F' -A5' D441(' -4'
?5:*15' -A5'1' D12C51?' 641' -A5' ?*::5??' 46' -A5' H'&G0?'
5&-51D1'?5' A5' ?5:4&F' @2?' (= =' F*:2-?' -4'
-A5' ?D'5?' 5ED 4C5F' '&' A'?' ?51$':5' -A51' :A21G5?'
5M*2 C' D15D4?-514*?' 64 4@5F[' Ü@A' 5' ?4E5' 46' -A5'
2*F'5&:5' ?-215F' '&:15F* 4*?(' 4-A51?' 2*GA5F(' 2&F'
-A5' H'&G' A'E?5 6(' 2?A2E5F' 46'-A5' D2 -1C' D21-' A5' @2?'
- $># " 'F'?E'??5F' -A5' @A4 5' 2662'1' 2?' 2',5?-' A5'
:4EE4&' ?2C'&G' 46' -A5') (' ' 8 ' ' &'
2-' -A'?' F2C(' 2--5?-?' 2-' 52?-' -A5' D4D* 21' 62'-A' '&' -A5'
2&5:F4-5 9

14E' -A'?' E4E5&-(' 51F'&2&F' :4&-'&*5F' -4' ?A4@'
4&?2 $4' *&+4*&F5F' E21H?' 46' :4&6'F5&:5'[' 2F$'?'&G'
@'-A' A'E' 4&' 2 ' 'ED41-2&-' E2--51?(' 2&F' E2H'&G' A'E'
-A5' 4& C' :A2&&5'46'14C2'62$4*1' 5' 2G2'&' 15&5@5F('
'&' -A5' E4?-' 5EDA2-':' E2&&51(' A'?' D14E'?5' -4' 15?'G&'
-A5' 12&F' 2?-51?A'D' 46' -')2G4' '&' A'?' 62$4*1(' 4&'
-A65'1' 15-*1&' -4' D2'&(' 2&F' E2F5' 641E2' 2DD ':2B
-'4&' -4' -A5' D4D5' -4' :4&6'1E' '- 6' &' 2FF'-'4&' -4' -A5

I' 'P '# ' :# ' :# ' X' $&?#$' # J- '?#'$L
-' 2EF A ? #&$' / ' 8 $ ' $=' # ?+ ' ?$' 8 $ ' ' ? /'
-# $ ' #0' ### 0' ?' / - ' *'- +# ' ?' ' >

D 0'&:5 C A4&4*1? 2 152FC :4&65115F 4& 4&?2 $4(A5 G12&-5F A'E -A5 &4+ 5 F*:AC 46 5??2(+C 2& '&?-1*B E5&- @A':A(26-51 2 D4ED4*? 15:2D'-* 2-'4& 46 A'? ?-2-5 C -'- 5? 2&F E2&'64 F ?51$':5?(F5: 215? -A2- -A5?5 2--51 @515 -44 G152- 641 15:4ED5&?5 9 !&B 641-*&2-5 C 641 +4-A H'&G 2&F ?*+,5:-(-A'? @2? -44 -1*5 6

4&?2 $4 15E2'&5F 2 F2C 41 -@4 +5A'&F A'? 14C2

+$" # / *G?#&? +$/ ? + /$ + '#- / 2 . ? -#&# U 6 # $"# $ /# , $&& / * $ $+ + / (EEE / &$ 9 L &#$ &#+ &? 8 $ ' + $ $'#" #$ # # $ - $D *$? $? L I) I) S ( ) ? #& $ - 0 #& +$ #* * ? $? L + ( ) & ') ? #&D# " - & $#+# " ? G / ((' (; - $ / ?# $ J$ / &? #$00# *$ - $ #& '#& $ + '#' #0 '### $ + - + " # /# - , #& $V $ >L &$- ### . ?# * #+ > "$K# ## $ +$ JJ### & B ? . G?$ $ $L + & $# $ #+ - #&$ # #' ?$/? # / / ?$ G? #' #+ - 0$0 ?$ &$ 0 ?# D ? $" ?# #$?$ & * / /#G# ? ? " $ * $ 0 $ # " - L &# > ? $+ /$ 0F@ ? $ /& $# # " $? "? # L &#/ $ > $ / $ $?# " * & ? + $+ - #0 ? 8 $ $- $#

I ? #&$/ 8 $ $-# $ #0 ### &$- ### A 9 # $ + '#' #0 '## &$- '#J #J A P '# :# $ 222 :# - F)5 U : # 8 K$ 6 $ / K / 0 $ R 0 "# ? # + U , / $ '$ $, / $ $ " >:# >+# / $ $0 / > / $- + > &?$ > + > $+$/ - #+ > / & ! V Y& Y& ? / & + $- ; # $ $:#L

/$ + '# - / 2 . ? ' * +?# ' '$ # $ $ $+ + / (EEE / &$ 9 L # $ - $D *$? $? L #& D# " - & $#+# " ? G / ?# *?# " $ J$ / '#& $ / #+ - $&?$0 >L $ > $ + '#' #0 '### &$- ### . ?# * #+ > + & $# $ #+ - #&$ # ' > * $ # " $ / ? G? # #+ - 0$0 ?$ &$ 0 ?# D ? $" ?# #$?& * / /#G# ? ? " $ * $ 0 $ # " - L &# > ? $+ /$ 0F@ ? $ /& $# # " $? "? # L &#/ $ > $ / $ $?# " * & ? + $+ - #0 ? 8 $ $- $#

$&# +$> J- $# G?> *#&#$ / , $ '+ / + '#/ J '#- < 0# + + $ ' - " $ #/ /# # //# $ #0 #' &' J'### . U 6 -$ # /$ " J V $> ? * &$ '# '$ + '&$ #&' + '!/ *$# / / +$? $ - ?-$ / / ? + + , / * $# - / 0# V

E 2?-51' '&' 2D 5?(' -4' ?5-- 5' A'?' D1'$2-5' 26 62'1?' &' 2FF'-'4&' -4' -A5' A52$C' F5+-?' '&:*115F' +C' A'?' 4@&' G5B &514*?' ?-C 5' 46' '$'&G(' A5' A2F' 2??* E 5F' -A4?5' 46' E 2&C' 46' A'?' 4 F' :4 E D2&'4&?' '&' 2112?(' @'-A' @A4 E' -A5' @41 F' A2F' G4&5' 5??' D14?D514*? C' -A2&' @'-A' A'E ?5 6' A5' : 2'E?' 46' A'?' :15F'-41?(' -A5156415(' A2F' ?@4 5&' -4' ?*:A' 2&' 2 E 4*&-(' -A2-(' '&' 41F51' -4' ?2-'?6C' -A5 E' 6* C(' A5' @2?' F1'$5&' -4' ?2:1'6':5' D21-' 46' -A5' F4 E 2'&?' 2-5 C' G12&-5F' A'E ' 2$'&G' F'?:A21G5F' 2 ' -A5' 4+ 'G2-'4&?' 46' 2' E 2&' 46' A4&4*1(' A5' D15D215F' -4' M*'-' -A5' 2&F' 4$51' @A':A' A5' A2F' 1* 5F' @'-A' ?4' E *:A' ?D 5&F4*1' 2&F' 15.3' &4@&' 641' &521 C' 64*1' C521?' A5' 52D4 '-2&?' '&' 2' +4FC' 64 4@5F' A'E' -4' -A5' $5??5 2&F' &4+ 5?(' :2$2B '51?(' 2&F' 5$5&' 2F'5?' 46' -A5' A'GA5?-' 12&H' '&G515F' 4&' -A5' ?A415' -4' +'F' A'E' 2' 2?-' 2F'5*' 4-' 2' F1C' > ' ?2C?' -A5' A'?-41'2&(' @2?' -4' +5' ?55&' 4' :4 E B D 5-5 C' A2F' A5' F2LL 5F' -A5'1' 'E 2G'&2-'4&?(' 2&F' :2DB -'$2-5F' -A5'1' A521-?(' +C' A'?' +1' '2&-' 2&F' D4D* 21' E 2&&51?(' A'?' E *&'6':5&-' ?D'1'-(' 2&F' -A5' 5M*'-C' 46' A'?' 2F E '&'?-12-'4&(' 641E '&G' :51-2'& C' 621' ,*?-51(' '6' &4-' ?*151' : 2'E?' -4' 2F E '12-'4&(' -A2&' -A5' + 44F.?-2'&5F' -14DA'5?' 46' E' '-21C' ?*::5??' 5' @2?' ?*::55F5F' '&' -A5' 466':5(' 46' G12&F' :4&?-2+ 5' 46' -A5' H'&GF4 E' +C' 14?.' D514' 4 4&&2(' 2&F' '&' -A2-' 46' $':514C' +C' -A5' 4*&-' 46' '+2G41L2(' 51F'&2&F0?' &5DA5@ 9

&' -A5' ;S-A' 46') *&5(' -A5' 14C2' 6 55-' 46' 12G4&' 5&-515F' -A5' '-- 5' D41-' 46' 2$4&2(' @A515' -A5' T'&G' 46

I' 'P '# ' :# ' --' F3E' #' ' #0' '#' &$-'' A 8 #&&#$ /# #' A 8$ #0$>' + ##' #0' JJ' +'#'# -' JJ## A ? #&$/ ' &$-'#J' A' 8#$ ' ' #0' 8 ' $-' #0' ### ' &$-'#' HHH' &$-0#' A' ++ ' +

; 0 !

12&:5(A2F 2 152FC +55& @2'-'&G '- ?5$512 F2C?
A5 15&:A &2$C @2? 41F515F 4*- -4 15:5'$5 -A5
2-A+ ':E 4- 21: ! 2&F" -A5 $5??5 ? 4& 5'-A51 ?'F5(
G2' C F5:412-5F @'-A -A5 &2-'4&2 6 2G? 2&F 5&?'G&?(
1'C2 5=U52:A04-AU1 '& -A5 +52*-C 2&F E2G&'6':5&:5
46 -A5'1 5M*'DE5&-0'9 T'&G 51F'&2&F0? G2 5C? @515
?D152F ^C'-A 1':A :21D5-?0 2&F 2@ ''&G?9 46 C5 4@ 2&F
[?:21 5-,.M&F 'D$51C ?2' 41 '& .-A5 6 55- 5JA'+'-5F -A5
?2 E D UG2*FC.:+ 4*15F '$5 C 46 -A5 14C2 A4*?5 46
12G4&(, FA'? Z :2E5-4 @5 :4E5 A'? '*?-1'4*?
G*5?-?(A--5&F5F * 2 G2 2&- -12'& 46 A'? &4+' '-C
2&F :A'$2 1C N 2&F '& 41F51 -4 15:'D14:2-5(2? 621
2? D4??'+ 5(-A+ :4&6'F5&:5 15D4?5F '& A'E +C -A5
E4&21:A @'-A @A4E A5 A2F +55& ?4 15:5&- C 2-
F52F C 65*F('E E5F'2-5 C @5&- 4& +421F -A5 $5??5
46 -A5 2--51 9 41?5? 2&F E * 5? 1':A C :2D21'?4&5F
2@2'-5F -A5E 2- -A5 2&F'&G A5 15&:A H'&G(
E4*&-'&G A'??-55F(G2 2&- C D2:5F -A5 C4*&G b*55&
46 12G4& +5A'&F A'E '? :2$2 '51? F'F -A5 ?2E5
@'-A -A5 2F'5? 46 A51 ?*'-5(E4?- 46.-A5E 15&:A
@4E5&(-A4*GA 2--'15F(2? 2&0 4 F :A14&': 51 46
-A5 &2-'4& 12-A51 D55$'?A C :4ED2'&?(26-51 -A5
D2&'?A 62?A'4&N 2&F -A5 @A4 5 D21-C(@'-A -A5

I T - $& & $+ + =
+ $0# ' ' / '# # + '/ ' '
- # #+# $ ## # &#-#
#$ #' $ # - &' # $ K#
$& 0# #+## #+#&#' ' #=
& &# #$ #' ' & "# # /# -$ =
$/ ' +$ / - # # " # / (
/# ' ' / $ + + #$ / ' *=
* '& ++ '&#$ & ' /#

2 $'-2 D14D1'2 '& 21+'-1'4 F5 0
2-14 :4& &4& E'&415 :4&6'F5&
L2(:A5 ?5 ?5ED15 64??514 ?-2-
:4&D41F'??'E 612-5 K / ?-41(
F0 -2 -4E '$' D 7 A'?
2?-4&'?AE5&-46-A5 -2 '2& '?2&
'&F'66515&- -1'+*-5 -4 -A5 A2+'B
-*2 G44F 62'-A 46-A5 -'E5?

?' -A5' G2 2&-' 0 *+'G&C' @2?' :4&6'&5F' -4' A'?' 2D21-E5&-' +C' -A5' G4*-(' 51F'&2&F(' @A4' A2F' 2 @2C?' A5 F' A'?' -2 5&-?' 2&F' :4&F',:-' '&' A'GA' 5?-55E(' :4EB D 'E5&-5F' A'E' +C' 2' $'?'-' '&' D51?4&' *-' &4' 4&5' 5JB :'-5F' ?*:A' G5&512' '&-515?-' 2&F' 2--5&-'4&' 2?' 4&?2 $4' F5' 41F4$2(' @A4' @2?' 5EDA2-':2 C' -A5' A514' 46' -A5' F2CM' 2-' 52?-(' ?*:A' '?' -A5' -5?-'E4&C' 46' *':'21F'&'(' @A4' @' ' &4-' +5' ?*?D5:-5F' 46' 2&C' *&F*5' D21-'2 '-C' 2&C' 2' 15&:AE2&' -A515' A2F' A2F' +'--51' 5JD51'5&:5' 46' A'?' E' '-21C' D14@5??' 2&C' 4-A51?' A2F' G14@&' 62E '21' @'-A' A'?' 5JD 4'-?' '&' -A5' 5J2GG512-5F' 15D41-?' 46'-A5'1':4*&-1CE5&' A5C' A2F' +55&' -2*GA-' -4' 15B G21F' A'E' @'-A' E'&G 5F' 655 '&G?' 46' 6521' 2&F' A2-15F(' 2&F' :4* F' ?:21:5 C' :15F'-' -A5'1' ?5&?5?' 2?' -A5C' +5A5 F' -A5' +*G+521' 46'-A5'1''E2G'&2-'4&?'F'?-'&G*'?A5F'2+4$5' 2' 4-A51?' 641' R -A5' E2,5?-C' 46' A'?' D15?5&:5(' -A5' D4 '?A5F' 5 5G2&:5' 46' A'?' F'?:4*1?5(' 2&F' E2&&51?' '&' @A':A' F'G&'-C"@2?' + 5&F5F' @'-A' G12:5 K' 9

-' &4&5' @515' ?4' 4D5&' '&' -A5'1' 2FE'12-'4&' 2?' T'&G' 4'?' -' A'?' 15M*5?-(' 4&?2 $4' @2?' 2FE'--5F' -4' ?*D' 2-' -A5' ?2E5' -2+ 5' @'-A' A'?' 14C2' G*5?-?' 2&F

?*D > 5E+4(?-41' '&'L' '+' $'' > -' 52'?(D' ; =

g' ?-41'2' F) -2' -4E' '$' DD' ((> ')4$'*?('-25' *?-' '1' D' ;S; > A14&' F5' 12& 2D' '+' ''' :2D' '$

R' 2' &4& F2$2' E'&415' E2B -51'2' 2# 12G'4&2E5&-# ' ' 12& 2D'-2&4(2' M*25' &4& 512&4 E5&4' $4 -# G # 4::A' F5G # *4E'&# D51' 2'62E2' F5' ?*4' $2 415(5' D51' 2' E5E41'2' F# -2&-5' $'--41'5(2

, $ ' *$& '$' &?# # $ K #' $ = & $' &?' '# # $ ' ' /# #' ' &?' '$ ' $' ' # ' + + ' /#' ' ' #' ' + ' ' # $K#$ ' /# & + - $ ' ' $ ' I' 1' I' 1' ' $&& & '$' (' $ +# $K# ' / " # +# # $' *$ $' && ' / $' - K$' $' $' +$" #*#& K$' / ' -$ ' # " #' ' $' +$ # $' - $' /# " $'# $' & /# $' /# " $K#$' +$' - $' # # ' ' /# $ &#$ V' Y&' Y&' 8 #&&#$ /# #' 0# -

A'E?5 6 *1'&G -A5 15D2?- A5 ?*1$5C5F A'?' *?-1'B 4*? G*5?- @'-A -A5 F55D5?- '&-515?-(2?H'&G A'E $21'B 4*? D21-':* 21? 15?D5:-'&G -A4?5 E5E412+ 5 :2EB D2'G&? @A':A A2F D14$5F ?4 62-2 -4 12&:5 4 2 -A5?5 -A5 152- 2D-2'& 15?D4&F5F @'-A +5:4E'&G G12$'-C(?2C? -A5 :A14&': 51 2&F -A5 15&:A E4&B 21:A -5?-'6'5F A'? ?2-'?62:-'4&(2- D21-'&G(+C -2H'&G 2 E2??'$5 :A2'& 46 5JM*'?'-5 @41HE2&?A'D 614E A'? 4@& &5:H(2&F -A14@'&G '- 14*&F 4&?2 $40? A5 A'?-41'2&? 46 -A5 5$5&- 2DD521 -4 +5 5&-'15 C 4$51B @A5 E5F@'-A -A5 E2G&'-*F5 46 -A5 A4&4*1:4&65115F 4& -A5 152- 2D-2'& +C -A*? 2FE'--'&G A'E -4 -A5 ?2E5 -2+ 5 @'-A -A155 :14@&5F A52F?N 2&F *':B :'21F'& F45? &4- A5?'-2-5 -4 D14&4*&:5 '- 2 E415 G 41'4*? 5D4:A '& A'? '65 -A2& 5$5& -A2- 46 A'? -1'B *EDA2 5&-1C '&-4 -A5 :2D'-2 46 2D 5? 9

1'&G -A'? '&-51$'5@(-A5 E4&21:A? A5 F 15D52-B 5F :4&6515&:5?(2- @A':A &4&5 @515 D15?5&- +- -A5 D2D2 5&$4C(2&F 4*'?0? 62$4*1'-5 E'&'?-51 0 E. +4'?5 A5 ?*+,5:- 46 F'?:*??'4& :2& 4& C +5 :4&B ,5:-*15F +C -A5 ?*+?5M*5&- D14:55F'&G?(@A':A E2H5 '- D14+2+ 5 '- 15 2-5F -4 -2 CN 2&F -A2- '- @2? '& -A'? ?52?4& 46 'F 5 F2 '2&:5 2&F 65?-'$'-C -A2- -A5 -@4 D1'&:5?(@A4 A5 F -A5 F5?-'&'5? 46 -A2- :4*&-1C '& -A5'1 A2&F?(E2-*15F -A5 62E4*? 52G*5 46 2E. +12C(?4 F'2?-14*? -4 5&':5(2&F 156 5:-'&G '-- 5

I $ + :# / 6 = $ -$## 0 + # - + # &'# A ? #&$ 425 A + / $>$ /'&?$- / 8 $-#0 ###&$-#' A JJ $-' + $ + J' 8 #&&#$ /# # + #'--))' A +$ / K &$-&&J)3 A 0# - A ; # $L

:15F'-4&'-? D14,5:-41?(5'-A514&-A5 ?:4155 465 G44F 62'-A 41 ?4*&F D4 ':C (^,--4-A'? @5?A2 A2$55 4:B :2?'4&-4 15-*1&A51526-51 9

-I 5&G-A(26-515&,4C'&G 641-4*1 F2C? -A5 ?D 5&B F'F A4?D'-2 '-C 46-A51'1 14C2 5&-51-2'&51(-A5 T'&G 2&F b*55&46 12G4&1551&+21H5F(2&F 152:A5F -A5'1 4@&D41-46 2 5&:'2(26-51 $21'4*? F5-5&-'4&?(4& -A5 ; -A 46)* C < 51F'&2&F(A2$'&G 15?-5F 2 ?A41-'E5('&A'? +52*-'6* :2D'-2 (D15??5F641@21F-4 2?-'5(@A515A'? D15?5&:5 @2? 52G51 C 5JD5:-5F & -A5 +41F51? A5 @2? E5- +C -A5 *H5? 46 +*B M*51M*5 2&F 5F'&2 5 '(A'? 62'-A6* 64 4@51 -A5 4*&- F5 '6*5&-5?(2&F E2&C 4-A51 &4+ 5? 2&F :2B $2 '51? 5 @2? ?44& 26-51 ,4'&5F +C F5D*-'5? 614E E2&C 46 -A5 D1'&:'D2 :'-'5? '& -A5 H'&GF4E(2&F -A*? 5?:41-5F E2F5 A'? 5&-1C '&-4 '- +C -A5 @2C 46 4&-52G*F4(4& -A5 ;<?- 46 *G*?- 4@ F'66515&- 614E -A5 641 41& 2&F 4*-:2?- :4&F'-'4& '& @A':A A5 A2F M*'--5F -A5 :4*&-1C 2 ?A41- C521 +5641515 5 '&-'E2-5F -A5 :A2&G5 '& A'? 4@& :'1:*E?-2&:5?(+C -A5 G152-51 ?-2-5 2&F ?A4@ 46 2*-A41'-C @A':A A5 &4@ 2??*E5F A5 15?'F*5 46-A5 4 F -2 '2& 21EC(,*?- 211'$5F *&F51 -A5 :5 5+12-5F 5F14 2$2114(4*&- F5 <'$5-4(- D15:5F5F A'E 4& -A5 E21:A 2&F A5 @2? D51?4&2 C 2--5&F5F +C A'? 2 :2 F5?(2 .

I P /C 6# / # #' '# ? D# "/ +* $- H ###&?JJJ'### A = # & +- * ? # +# $&& # #$ # - 244 A $ '#& # # ? $ #$ G$:# $ /# $: * 4B $ / $'$# $ X Q# "' /# $ /?$/" $ L + : - 2)3 A P '# /?#+ ? # $ / # > * :# # - 25E

G*2:' ?(2&F H'&G?.2-.21E?(@'-A 2 -A5 2DD14D1'2-5 '&?'G&'2 46 14C2 ?*D15E2:C 9

- 41-4 5? A5 @2? E5- +C -A5 M*55& A'? F2*GAB -51(2::4ED2&'5F +C 1:A+'?A4D Z'E5&5? A5 '&B -51$'5@ +5-@55& -A5E A2F E415 46 D2'& - '2& D 52?*15 '& '- A5 H'&G @2? G152- C ?A4:H5F +C)42&&20? 2DD5212&:5 641 A51 @' F.2&F A2GG21F 652-*15?(5E2B :'2-5F 6'G*15(2&F -A5 A'52&(?M*2 'F 2--'15 '& @A':A ?A5 @2? F15??5F(E2F5 '- F'6 :* - -4 15:4G&'?5 2&C -12:5 46 -A5 F2*GA-51 614E @A4E A5 A2F +55& ?4 4&G ?5D212-5F A5 F'?:4$515F E415 ?5&?'+' '-C 4& ?55'&G A'E -A2& ?A5 A2F ?A4@& ?'&:5 A51 A*?+2&F0? F52-A(2&F A5&:5641-A 15?'G&5F A51?5 6 -4 A51 62-A510? @' @'-A '-- 5 4DD4?'-'4& A5 @2? ?44& 26-51 '&B F*:5F +C A'E -4 :A2&G5 A51 *&?*'-2+ 5 15?'F5&:5 641 E415 :4EE4F'4*?M*21-51? 2- 41F5?' 2? 51 A*?B +2&F0? 15E2'&? @515 2'F '& -A5 E4&2?-51C 2&-2 212(2F,4'&'&G -A5 D2 2:5(614E(@A4?5 @'&F4@? ?A5 :4* F +5A4 F A'? ?5D* :A15 14E -A'? D51'4F(2B -A4*GA ?A5 ?*1$'$5F 641-C.?5$5& C521?(A5 &5$51 M*'--5F -A5 @2 ? 46 A51 A2+'-2-'4& &F 2 -A4*GA A51 &2E5 2DD5215F ,4'&- C @'-A -A2- 46 A51 ?4&(A21 5? ('& 2 D*+ ':2:-?(?A5 &5$51 26-51@21F? :4* F +5 '&F*:5F -4 ?'G& 2 D2D51(41 -2H5 D21- '& 2&C -12&?2:-'4&? 46 2 D*+ ':2 &2-*15 A5 '&G515F 4*- 2 A2 6 :5&-*1C 46 F1521C 5J'?-5&:5(2? :4ED 5-5 C F52F -4 -A5 @41 F 2? -A5 15E2'&? @A':A ? 5D- '& -A5 E4&2?-51C 46 2&-2 212 +5?'F5 A51 ,.

I +$ / K '&$- '&&J A ' 8 + &# '* ')(A '# / M 9 # $ + '#' #0 '###'&$- '#>' ' $ ', # &'4 I/#$ '5' '## A ' $ > ' - '&&& '### A ' *' ' 8 + &# ' * ')@ A

14E -A'? -'E5 -A5 2-A4 ':(H'&G 5J51:'?5F 2& 2*-A41'-C &521 C 27 *&F'?D*-5F(2&F 621 5?? 'E'-5F 2&F F56'&5F -A2&' '& -A5M F2C?(46)?2+5 2 4 6'1E F'F(A5 655 ' '& A'? ?52-('&F55F(-A2-)A5 4E'--5F -4 4+B -2'& -A5 :4&?-'-*-'4&2A@2112&- 46 :41-5? 5 A2F G152- C F5?'15F -A'? 2- -A5 2-5 '115G* 21 E55-'&G 46 -A2- +4FCM +*- '- +14H5 *D(27 @5 A2$5(?55&(@'-AB 4*- 5665:-'&G 2&C -A'&G(2&F '&F55F -A5 F'?2665:-'4& 46 *1G4? 2&F ?4E5 4-A51 D1'&:'D2 :'-'5?(2- -A2- -'E5(E*?- A2$5 E2F5 -A5 ?*::5?? 46'?*:A 2&2DD ':2B -'4&M*'-5 F4*+-6* * - -A5 G5&512 :41F'2 '-C@'-A @A':A 51F'&2&F @2? G155-5F(G2$5 &4 G14*&F 641 2DD15A5&F'&G ?*:A 2 15?* - 2- D15?5&-

2&C('&F55F(46 A'? D21-'?2&? 4+,5:-5F -4 2&C '&B -51$5&-'4& 46 -A5 5G'? 2-*15 '& -A'? E2--51 27 ?*D51B 6*4*?(2 5G'&G -A2- A5 A5 F -A5 15G5&:C 27 &2-*12 G*21F'2& 46 A'? F2*GA-51(&4E'&2-5F(E4154$51(+C -A5 M*55&0?@' (2&F :4&6'1E5F +C -A5 :41-5? 2- 414 A5?5 1'GA-?(-A5C 21G*5F(@515 &4- F'?-*1+5F +C A'? 15?'G&2-'4&(@A':A @2? 2 :4ED* ?41C 2:-(2&F A2F &5$51 15:5'$5F 2&C 5JD15?? 5G'? 2-'$5 ?2&:-'4&M 2&F @A':A('& 2&C 5$5&-(E*?- +5 :4&?'F515F 2? '&-5&F5F 4& C 641 A' 'D0? '65-'E5(2&F -4 +5 &5:5??21' C F5B -51E'&5F @'-A -A2-

-(A4@5$51 D 2?'+ 5 -A5?5 $'5@?(-A5 '115G* 21'-C

$ > - -# -
&&& J###0A 9 #$ $ #0 '### &$- J#J A $ / '$ 6# / $: + '#' - 24

A' 'D0? 15E2'&? @515 26-51B @21F? 15E4$5F -4 -A5 :2-A5F12 :A*1:A 46 12&2F2(@A515 -A5C @515 F5D4?'-5F(-4G5-A51 @'-A

? *?# G#* P $ $ # $ +$" #*#& - &? & /0> ?$ $?$ *# /#L $ / $ /$0 $ / K #" /$/ / 8 $ $/$ #0 ### &'## A + $ #& /0 = -$" + '### - (5E

4 6 51F'&2&F ?' D14:55F'&G?' 6*1&'?A5F 2& 21G*E5&- 641 F'?4+5F'5&:5 4& -A5 'D21- 4 6 F'?:4&-5&-5F &4+ 5?(@A4 E2'&-2'&5F -A2- -A5C H5@ &4 ?*D15E5 2*-A4B 1'-C +*- -A2(- 4 6-A5'$ b*55&)42&&2((- ? 4E5 4-A51 A2F +55& ?2&:-'4&5F +C -A5 5G'? 2-*15 A5 @A4 5(26'2'1 @2?' 6'&2 C ?5-- 5F(@'-A E415 2--5&-'4& -4 :4&B ?-'-*-'4&2 641E?('& -A5 :41-5?' A5 F 2- 2F1'F(:B -4+51 -A(< < (@A5& -A5 H'&G -44H -A5 15G* 21 42-A?' 2?' 2FE'&'?-12-41 4 6-A5 152 E '& A'?' F2*GA-510?' &2E5(2&F 2?' G*21F'2& 4 6 A51 ?4& 9

51F'&2&F0?' F5D41-E5&-(4& A'?' 6'1?- 15-*1&(@2?' F'?-'&G*'?A5F +C 2 E4?- G12:'4*?' : 5E5&:C(5$'&:5F &4- ?4 E*:A('&F55F(+C 2&C 5J:5??'$5 15E*&512-'4& 4 6?51$':5?(2?' +C -A5 D4 '-': 4+ '$'4& 4 6 '&,*1'5? 6 A5 5$51 2 *F5F -4 -A5?5('- @2?' '& 2 ?D41-'$5 @2C('ED C'&G -A515 @2?' &4 12&:4*1 41 ' .@' 2- A521-(R A4 @4* F A2$5 -A4*GA-(K A5 5J: 2'E5F 4&5 F2C -4 2 :4*1-'51 &521 A'E(I -A2- C4*: 4* F 2+2&F4& ?4

I 9 # $ + '#' #0 '## &' JJ'# JJJ#' .' #0 #J'& JJ ? 0 /' $ " $" *' ?' - *' ?' $, #'/ # " $"$# ?# $ +-# *' ?' " &> 0> ? $? #& D# " R &$ $ '" $ / V ? $> R , $ $ / '" 0 +$&# / " $ / # -' ! $ -' $K $0 & $* $ - $, *## $+ $+$/ B & #*#&$/ / - , > B 0 " $ / B $ &# /$/ B $ &$ / +$> '# $+ , / 0#$+ ?$& B & # & + '$ $ B $ '#/ / $ # $ $ $ - L , $ $/+# # $&# (" 0 $&# / # / $ B & & /# $ $, # $ > / > +$ /$, / B & +# / $ &$ V Y& / $ $ #0 # &$ / $ $ &$/ / 6# $- $ # $' #$ + ## ## &' J'### .' $ # $? G ' # ! #*# /' # "$ /# " /# $ /0 0 , & ' L &$ # *'& * ?# - - $ $ $& & # ? / +$ / *' ?' $ # #$ &' &# .' G$? *' ?' $J#+# #$ " $L $ /'0> # H * # ? 0! & * G?#&?' G$ = &+ ? ' && # ? &?L / D ?$ 9+# $ #0 '### &' J '##

52?' C 4*1 4 F E2?-51(641 4&5 ?4 C4*&G 2&F '&5JB D51'5&:5F0K> R A4 @4J' F A2$5 -A4*GA-(K 05D '5F -A5 4-A51 @'-A 5M*2 + *&-&5??(R -A2- E C 4 F E2?-51 @4* F A2$5 4*- '$5F E C C4*&G 4&5 0K9

'-A 2 -A'? :4ED 2'?2&:5(A4@5$51(-A5 H'&G F'F &4- &5G 5:- D15:2*-'4&? 641 D 2:'&G A'? 2*-A41'-C 4& 2 ?*15 +2?'?(2&F 65&:'&G '- 14*&F ?4 2? -4 ?:155&' - 5665:-*2 C 614E -A5 '&?* -? -4 @A':A '- A2F +55& 641E51 C 5JD4?5F 5 15-2'&5F '& D2C E4?- 46 -A5 4 F -2 '2& 5$'5?(@'-A -A5 4?-5&?'+ 5 D*1D4?5 46 2& 61':2& 5JD5F'-'4& 5 -44H G44F :215 -A2- -A5 E ' '-21C 41F51? ?A4* F A4 F -A5'1 -144D? '&:4&?-2&- 152F'&5??(2&F -A2- -A5 E ' '-'2 46 -A5 H'&GF4E ?A4* F +5 '& :4&F'-'4& 641 '&?-2&- ?51$':5 5 641E5F 2 +4FC G*21F -4 2--5&F -A5 14C2 D51?4& 4& 2 4::2B ?'4&? - :4&?'?-5F 2- 6'1?- 46 4& C -@4 A*&F15F E5&(21E5F 2&F F1' 5F 26-51 -A5 62?A'4& 46 -A5 @'?? 41.' F4&&2&:5(2&F D 2:5F *&F51 -A5 :4E E2&F 46 A'? :A14&': 51 C412(2& 5JD51'5&:5F E21-'&5-(@A4 E2F5 ?4E5 6'G*15 2- -A5 F565&:5 46 2 ??2 A'? '&B ?-'-*-'4& @2? D14+2+ C 'E E5F'2-5 C ?*GG5?-5F +C -A5 G21F5 F*:41D? 46 4*'? Z 2- 2$4&2(@A':A(2 -4B G5-A51 4& 2 E415 641E'F2+ 5 ?:2 5('&F55F(A2F 5JB :'-5F A'? 2FE'12-'4& +C -A5 E2G&'6':5&:5 46 '-? 2DB D4'&-E5&-? 2&F -A414*GA F'?:'D '&5 6

)4$*; '-25 <<< '141 A5 2-A4':H'&G @2? $51C -;S; > A14&F5 1 2D'-2&(E'&2-5 '& A'? '&M*'1'5?(2::41F: '+''':2D '$' '&G -4 *-4&(RF* 62':-5-F5

9 #$ +'#' #0' '###' $/ / "$ / / / > / / &$- H A / / >/ / '" # ? ++ , C#' - = '# / $- + / / &$/ / / #'$" $ / &? # + = 6# + '#' '#A -?$ / $ & V 0# - $' ###' &?$- JJJ'###

4-@'-A?-2&F'&G‘ -A5‘ H'&G0?‘ G5&512‘ D4D* 21'-C(‘ -A515‘ @515‘ ?-' ‘ 2‘ 65@‘ :4&?'F512+ 5‘ D51?4&?‘ @A4‘ 15B G21F5F‘ A'?‘ 15?* E D-'4&‘ 46‘ 2*-A41'-C‘ @'-A‘ 2&‘ 5$' ‘ 5C5‘ 6‘-A5?5(‘ 4&‘)*2&‘ 2&*5‘ A2F‘ 6 5F‘ -A5‘ H'&GF4E‘ +5641 5‘ A'?‘ 2DD142:A(‘ 2&F‘ -2H5&‘ 156*G5‘ 2-‘ -A5‘ :4*1-‘ 46‘ 2J'E' '2&(‘ @A515‘ -A5‘ :4*&?5 41?‘ 46‘ -A2-‘ E4&21:A‘ -44H‘ G44F‘ :215‘ -A2-‘ A5‘ ?A4* F‘ &4-‘ 2:M*'15‘ -A5‘ 2?B :5&F5&:C‘ A5‘ A2F‘ 4+-2'&5F‘ 4$51‘ A' 'D‘ A5‘ *H5‘ F5‘ 2,212(‘ A4@5$51(‘ ?-' ‘ 15E2'&5F‘ '&‘ 2?-' 5(‘ ?A*-B -'&G‘ A'E?5 6‘ *D‘ '&‘ A'?‘ 641-15??5?U‘ 2&F‘ 156*?'&G‘ 2 ‘ :4ED14E'?5‘ 41‘ 4+5F'5&:5‘ A5‘ H'&G(‘ @'-A4*-‘ A5?'B -2-'4&(‘ :4EE2&F5F‘ 2$2114‘ -4‘ E21:A‘ 2G2'&?-‘ A'E‘ @'-A‘ A'?‘ @A4 5‘ 641:5‘ 2,212‘ @2?‘ D51?*2F5F‘ +C‘ A'?‘ 61'5&F?‘ -4‘ -5&F51‘ A'?‘ ?*+E'??'4&(‘ @'-A4*-‘ @2'-'&G‘ -A5‘ 5&:4*&-51N‘ 2&F‘ A5‘ ?*115&F515F‘ A'?‘ ?-14&GA4 F?‘ -4‘ -A5‘ H'&G(‘ @A4(‘ 26-51‘ F5-2'&'&G‘ -A5E‘ ?4E5‘ -'E5‘ '&‘ A'?‘ H55D'&G(‘ F5 '$515F‘ -A5E‘ 4$51‘ -4‘ -A5‘ F*H50?‘ 5 F5?-‘ ?4& 9

'-A‘ 2&4-A51‘ 4665&F51‘ A5‘ F52 -‘ E415‘ ?-51& C A'?‘ @2?‘ 4&‘ 5F14‘ F5‘ 41F4$2(‘ 21M*'?‘ F5‘ 1'5G4(@A4(‘ -A5‘ 152F51‘ E2C‘ 15E5E+51(‘ @A5&‘ M*'-5‘ 2‘ +4C(&2114@ C‘ 5?:2D5F‘ -A5‘ + 44FC‘ 62-5‘ 46‘ A'?‘ 62-A51(‘ 4&?4 F5‘ G*' 21(‘ '&‘ -A5‘ 62-2‘ ? 2*GA-51‘ 46‘ -A5‘ '5112‘ 51. E5,2‘ A'?‘ &4+ 5E2&(‘ '&‘ :4EE4&‘ @'-A‘ ?4E5‘ S4-A51 &F2 *?'2&‘ 41F?(‘ A2F‘ -2H5&‘ *,&+12G5‘ 2-‘ -A5‘ '-- 5‘ 5?-'E2-'4&‘ 2&F‘ 62$4*1‘ ?A4@&‘ -A5E(‘ 2?‘ -A5C‘ :4&B :5'$5F(‘ +C‘ 51F'&2&F(‘ '&‘ :4ED21'?4&‘ @'-A‘ -A5‘ &4+ 5?‘ 46‘ -A5‘ &41-AN‘ 2&F‘ A'?‘ -5E51'-C‘ @5&-‘ ?4‘ 621‘ 2?‘ &4-

I‘ +$ / K‘ ‘&$-‘&&J A‘)@ A 9 # $‘ +‘ '#“ #0‘ '###‘ ‘ $ > ‘ - ‘ -# ‘ -‘ &$- J'‘ &&& J### A ' ‘ 8 + &# ‘ *

4& C -4 4+?-1*:- -A5 D14:55F'&G? 46 4&5 46-A5 14C2 46 :51?(?5&- -4 41F4$2 -4 '&M*'15 '&-4 15:5&- F'?B -*1+2&:5? -A515(+*- -4 'ED1'?4& A'E '& -A5 F*&B G54&? 46A'? :2?- 5 46 4&-' 2

A'? 4*-12G5 4& -A5 D51?4& 46 A'? 4@& ?51$2&- 5J2?D512-5F -A5 H'&G +5C4&F 2 +4*&F? 5 15B ?4 $5F 2- 4&:5 -4 E2H5 ?*:A 2& 5J2ED 5 46-A5 46B 65&F51 2? ?A4* F ?-1'H5 -51141 '&-4 -A5 F'?2665:-5F &4+ 5?(2&F ?A'5 F -A5 14C2 2*-A41'-C 614E -A5 15D5B -'-'4& 46 ?'E' 21 '&F'G&'-'5? ?' -A5 E21M*'? @2? 4&5 46-A5' E4?- D4-5&- 2&F 5J-5&?'$5 C 2 '5F G12&B F55? '& -A5 H'&GF4E(51F'&2&F E2F5 A'? D15D212B -'4&? 4& 2 641E'F2+ 5 ?:2 5(41F51'&G('& 2FF'-'4& -4 -A5 15G* 21 -144D?(2 5$C 46 2 +5-@55& -A5 2G5? 46 -@5&-C 2&F?5$5&-C -A14*GA4*- &F2 *?'2 1'5G40? 61'5&F?(.2 21E5F 2- -A5?5 ?'G&? 46-A5 G2-A51'&G -5EB D5?-(+5?4*GA- A'E -4 2$51- '-('6D4??'+ 5(+C '&?-2&- :4&:5??'4&M 2&F A'? *&: 5(-A5 152- 2D-2'&(*1G5F -A'? E4?- 5EDA2-':2 C(2? -A5 4& C @2C 46 5?:2D'&G *--51 1*'&

A5 12?A C4*&G E2&(6'&F'&G A'E?5 6 'H5 C -4 15B :5'$5 &4 ?*DD41- '& -A5 *&5M*2 :4&-5?-(2::5D-5F -A5 :4*&?5 (2&F A2?-5&5F -4 4 5F4(-4 -A14@ A'E?5 62- -A5 H'&G0? 655- A5 '&F'G&2&- E4&2'0:A(A4@5$51 4* F &4- 2FE'- A'E '&-4 A'? D15?5&:5(+*- 41F515F A'E -4 F5 '$51 *D A'? 641-15??5?(2&F -4 15E4$5 -4 -A5 F'?-2&:5 46 6'$5 52G*5? 614E -A5 :4*1- A5 152- 2D-2'& ?44& 26-51 ?5&- -A5 H'&G 2& '&$5&-41C 46 A'? &5DA5@0? :2?- 5? 2&F 5?-2-5?(2- -A5 ?2E5 -'E5 F5.

D15:2-'&G A'? @12-A('& :4&?'F512-'4& 46 -A5 C4*-A 2&F '&5JD51'5&:5 46 -A5 4665&F51

51F'&2&F(A4@5$51(@'-A4*- A55F'&G -A'?(@5&- 4& @'-A A'? D15D212-'4&?(2&F A2$'&G :4ED 5-5F -A5E(5D-5E+51 < S(2F$2&:5F 12D'F C -4 -A5 ?4*-A A5& 211'$5F 2- 41F4$2(A5 41F515F -A5 'ED1'?4&E5&- 46 -A5 E21M*'? 641E2 D14:5?? @2? -A5& '&?-'-*-5F 2G2'&?- A'E +56415 -A5 14C2 :4*&:'(4& -A5 :A21G5 46 A'GA -152?4& 5 E2F5 &4 F565&:5(+*- -A15@ A'E?5 6 4& -A5 E51:C 46 A'? ?4$515'G& A5 :4*1- F5: 215F A5 A2F '&:*115F -A5 D5&2 -C 46 F52-AM +*- -A2- -A5 H'&G('& :4&?'F512-'4& 46 A'? ?*+E'??'4&(@2? G12:'4*? C D 52?5F -4 :4EE*-5 -A'? 641 2 6'&5 46 ; ((E1?(D51D5-*2 +2&'?AB E5&- 614E 41F4$2 2&F '-? F'?-1':-(2&F -A5 F5 '$51C 46 A'? 641-15??5? '&-4 -A5 14C2 H55D'&G(@'-A -A5 5&-'15 F5E4 '-'4& 46 -A5 4665&F'&G :2?- 5 46 4&-' 2 A'? 2?-(62E4*? 2? -A5 +'1-A.D 2:5 46 -A5 152- 2D-2'&(@2? 4&5 46 -A5 ?-14&G5?- 2&F E4?- +52*-'6* +*' FB '&G? '& 2 &F2*?'2 9 5&-5&:5 46 F52-A @2? 2- -A5 ?2E5 -'E5 D14&4*&:5F 2G2'&?- ?5$512 :2$2 '51?(2&F 4-A51 '&651'41 D51?4&?(:4&:51&5F '& -A5 2662'1(2&F @2? 'EE5F'2-5 C 5J5:*-5F

A5 2?-' '2& 21'?-4:12:C(2 21E5F 2&F F'?G*?-5F

U # #$ $V G # ?$ * # $ * ? ?$/ $ > U # #$ $ #$, $ '#/# # 0 - & - ? # > "$#, $ / + $ + =+$ G? G$ $ *$' # , 0 & +- $ +$ $, - -# ! /" * + ? 0# - ?/ %* /# /# # G$# # " * ? D# /=? $ /- L ! $V - &&&&'.' 6 G$ /$" " ' ?# *$ G $&, $# /G# ?? / > -# &&&&#' &&&&'

+C -A5 ?5$51'-C 46 2 ?5&-5&:5 @A':A ?-1*:H F4@& 4&5 46 -A5 E4?- :4&?'F512+ 5 46 -A5'1 41F51(@515 4D5& '& -A5'1 15E4&?-12&:5? -4 -A5 H'&G(+5?55:A'&G A'E('6 &4 4-A51 :4&?'F512-'4& E4$5F A'E '& 62$4*1 46 -A5 C4*&G &4+ 5E2&(-4 G12&- ?4E5-A'&G -4 -A5 F'?-'&G*'?A5F ?51$':5? 46 A'? 62-A51 2&F A'? *&: 5 A5 2--51(2? @5 2? -A5 12&F 4&?-2+ 5 5 2?:4(@A4 5&,4C5F -A5 A'GA5?- :4&?'F512-'4& 2- :4*1-(@515 5M*2 C D15??B '&G '& -A5'1 ?4 ':'-2-'4&? 51F'&2&F(A4@5$51(@2? '&5J412+ 5M 2&F -A5 ?5&-5&:5 @2? 5J5:*-5F A5 &4+ 5? :A265F '& $2'&M 2 -A4*GA -A5 :4&?-2+ 5 5JD4?B -* 2-5F @'-A -A5 H'&G '& 2 -4&5 @A':A &4 ?*+,5:- '& *14D5 +*- 2 2?-' '2& G12&F55 @4* F A2$5 $5&-*1B 5F -4 2??*E5 4&?2 $4 :44 C 15E21H5F(R - @2? :1'E5 5&4*GA '& 4& 5F14 -4 +5 15 2-5F -4 E5 K9

A'? ' *?-1'4*? E2& A2F G44F 152?4& -4 655 +5B 6415 -A'? -A2- A'? :15F'- 2- :4*1- @2? 4& -A5 @2&5 & A'? 15-*1& -4 D2'& A5 @2? 15:5'$5F @'-A *&B +4*&F5F 5&-A*?'2?E +C -A5 &2-'4& 5 @2? F5-2'&B 5F +C ' &5?? 2 65@' F2C? +5A'&F -A5 :4*1-(2&F A'? ,4'*1&5C -4@21F? *1G4? -4 15,4'&'-(4& A'? 15:4$51C(@2? 2 -1'*EDA2 D14:5??'4& -A5 @A4 5 @2C A5 142F? @515 -A14&G5F @'-A E * -'-*F5? ?48 &*E514*?(-A2- 2::4EE4F2-'4&? :4* F ?:21:5 C +5 64*&F 641 -A5E '& -A5 -4@&? 4& -A5 14*-5N.,. 641(-A5C :2E5

$ / $ &&# #0 HH &$- H A ? / &$- && J A $ > - 8 $ $-# #0 ### &$- '# A &&&J&## &&&J&### &&&&' A P = $ / '$ 6# / $: N'# :# - F3(A 9 # $ + '# - 24
+ '# #0 '### &$- JJ JJ#
JJ# A $ 0$!$ $ P '# :# **# :#=
$ 2@E) A 8$ #0$> + ## + - G

614E -A5 15E4-5?- D21-? 46 -A5 :4*&-1C(2 52G51 -4 :2-:A 2 G 'ED?5 46 -A5 A514 @A4?5 &2E5 2&F 5JB D 4'-?(-A5 -A5E5 46?-41C 2&F 46?4&G(@515 62E ' '21 -4 -A5 E52&5?- D52?2&- '& 2?-' 5 &-A'? @2C A5 E2F5 A'? 5&-1C '&-4 *1G4?(2E'F -A5 :A551'&G 2:B : 2E2-'4&? 46 -A5 D54D 5(2&F 2--5&F5F +C 2 :41-5G5 46 46 :51?(@A4 D4ED4*? C F'?D 2C5F 4& -A5'1 4@& D51?4&?(2&F -A5 :2D21'?4&? 46 -A5'1 ?-55F?(-A5 1':A ?D4' ? 46 -2 '2&:4&M*5?-? A5 4 F 4*&- F5 !15&2(A'? 61'5&F(@A4(@'-A -A5 @A4 5 :4*1-(:2E5 4*- +C 51F'&2&F0? 41F51? -4 15:5'$5 A'E(5J: 2'E5F @'-A 2 D14DA5-': ?'GA(2? A5 ?2@ -A5 ?D 5&F'F D2G52&- :4E5 Q?@55D'&G +C(R A'? G2 2&- ?A'D(6521(@' 15B M*'15 F55D51 @2-51 -4 1'F5 '& -A2& ?A5 @' 6'&F '& 2?-' 5PK9

51F'&2&F ?A4@5F A'? *?*2 G12:'4*? E2&&51? '& A'? 15:5D-'4& 46 4&?2 $4 - @2? &4- 4&G(A4@5$51(+56415 -A5 2--51 64*&F -A2- -A'? @2? 2 A5 @2? -4 5JB D5:- 4 2 *?'4& @2? E2F5 -4 -A5 G12&F.E2?-51B ?A'D A5&' '- @2? 2- 5&G-A +14*GA- +56415 -A5 H'&G(2&F A5 @2? 15E'&F5F 46 A'? D14E'?5?(A5 :4&B -1'$5F -4 F5651 -A5'1 D51641E2&:5 *&F51 $21'4*? D15B -5J-? N *&-' (2- 5&G-A('- +5:2E5 -44 2DD215&- '- @2? A'? '&-5&-'4& -4 5$2F5 -A5E 2 -4G5-A51

A' 5 -A5 152- 2D-2'& 2&F A'? 61'5&F? @515 6' B 5F @'-A 2& '&F'G&2-'4& 2- -A'? F*D ':'-C(@A':A -A5C :4* F ' ?*DD15??(2:'1:*E?-2&:5 4::*115F -4 '&:152?5 -A5 :4 F&5?? 21'?'&G '& 51F'&2&F0? E'&F -4@21F?

1 +$ / K &$- &&J A P '# :# 222 :# &'&# =M ? #&$ #0 ### &$-

A'? '&,*15F ?*+,5:- A'? @2? -A5 D14D4?5F E211'B 2G5 /2 E211'2G5 @A':A(614E @A2-5$51 :2*?5(&5$51 -44H D 2:5(79 46 4''?2 $40? F2*GA-51 $'12 -4 A'? 61'5&F -A5 4&?-2+ 5"46" 2?-' 5",9 51F'&2&F A2F F5B ?'G&5F -4 ?5:*15 A51 21G5 '&A51'-2&:5 -4 A'? 4@& 62E' C(+C 2&(2 '2&:5 @'-A A'? G12&F?4&)*2& F5 12G4&(?4& Y6 -A5 1:A+'?A4D 46 212G4??2 '? F'?D 52?*15 2-' 6'&F'&G A'E?5 6 :14??5F "'& -A'? @2? 6*1-A51 ?A21D5&5F +C -A5 D5-* 2&-' ?D'1'-' 46 A'? C4*&G M*55& A5 :4&?-2+ 5(&4@ 2 @'F4@51(A2F +55& 641E51 C E211'5F -4 2 &2-*12 F2*GA-51 46 51F'&2&F b*55& 51E2'&5(2F$51-'&G -4 A'? '&-5&F5F *&'4& @'-A -A5 2FC $'12(*&:515E4&'4*? C 2?H5F A'E(9 R 6 A5 F'F &4-' 655 '-' 2 F5G12F2-'4& -4 2::5D-' -A5 A2&F 46 2 ?*+,5:-(26-51 A2$'&G @5FF5F -A5 F2*GA-51 46 2 H'&G 0K> I 4@ :2& 655 '-' ?4(K A5 15D '5F(2 *F'&G -4 -A5 H'&G0? E211'2G5 @'-A A51(R @A5& ?4

I ; # $ $ # ' $ # "' ?$ $ '# $ +$ # / ? & $0 -$## 0 + '#' -' 4F2 . 6 ?$/ G G#' $ &$ / 6 $ $ / P $ $ / $" $ / $ $?# / $?? G$ $#/ 0> ? # #/ '# ' ? '&? &?? *' $ $ $ $ / /# $ / +$ $ K #" #/$/ / $ # L $ #0 ###' &$-' JJ# . '# $ +$ # / ? / / $0 $ $:# $ /# $: '* / $ /# / : $ & 8 $0 *' $ # $? G$ &$ /' M & && / / # 2(5F ?$ /#"L # > G?#&?? 0 &$+ ? /# $ > # ?# *$+# > 6 G$?# / *' 6$ $ / G$ & L $ /0> ? $? #& ' #" * ?# /# # " # ? / '#& D *' #$ 6 ?$/ $ " $ &?# *> # / $ # G# ?? $ > $ > ' $&& /L # "' $ # *' BE EEE / &$ 6 $-- $?$' - /' +$ > 0 $ /' 0 # L #$, $ # # $&& +-$ # / ? G ' G# ?? $?$ "? # G?#&?? +$/ ?#+' * $ /' $? ?$ ' / 6 /# /' 0 2@2F $* $' * G ? (# $ $-L - $ 0>' $ *' $ > - -# '&&&& JJ#J A #" #L /$/ / $ # $' 0# - $ A #& '* F4

' *?-1'4*?' 2&' 5J2 E D 5' A2?' +55&' ?5-' E 5PK' 51 E 2'&5((
@A4' :51-2'& C' :4* F' &4-' +42?-' -A5' E 2G&2&' E '-C' D6'
A51' D15F5:5??41(' @2?' ?4' ?-*&G"@'-A' -A5' 15-41-(' -A2-.'
?A5' &4-' 4& C' &5$51' 641G2$5' -A5' :4&?-2+ 5(' +*-' 5J-5&FB
5F' A51' D5--C' 15?5&-E5&-' -4', 14&?2 $4(' @A4' ?2@' -A5'
*H5' 46' $2' 614E' -A'?' -'E5' '&?-2 5F' '&' -A5' A4&4*1?'
A5' A2F' +56415' 5J: *?'$5 C' 5&,4C5F(' 46' 'E E5F'2-5' 2-B
-5&F2&:5' 4&' A51' 14C2' D51?4&' @A5&5$51' ?A5' 2DD5215F'
'&' D*+ ': 9

4@5$51' '&F'66515&-' 4&?2 $4' E 2C' A2$5' +55&' -4'
-A5' '-- 5' E41-'6':2-'4&?' '&6 ':-5F' +C' 65E2 5' ?D 55&(' A5'
:4* F' &4-' 5&F*15' 4&G51' A'?' 15?'F5&:5' 2-' 2' :4*1-'
@A515' A5' A2F' 4?-' 2 ' :4&?'F512-'4&' @'-A' -A5' ?4$5B
15'G&(' 2&F' 5JD51'5&:5F' &4-A'&G' +*-' F*D ':'-C' 2&F'
+2?5' '&G12-'-*F5' 5' 4+-2'&5F' 52$5(' @'-A4*-' F'66'B
:* -C(' -4' @'-AF12@' -4' A'?' 4@&' 5?-2-5?N @A515(' &4-'
4&G' 26-51(' -A5' H'&G(' 2?' '6' -4' E 2H5' ?4E5' 2E5&F?' 641'
-A5' G14??' $'4 2-'4&' 46' A'?' D14E'?5?(' G12&-5F' A'E' -A5'
14C2' :'-C' 46' 4,2(' &4-' E 2&C' 52G*5?' 6'.412' 12&2F2'
-' @2?' G'$5&' -4' A'E' 641' '65N 2&F' 51F'&2&F' A2F' -A5'
56614&-51C' -4' D14D4?5(' 2?' 2' :4&F'-'4&' 46' E 2H'&G' -A5'
G12&-' D51D5-*2' -4' A'?' A5'1?(' -A2-' 4&?2 $4' ?A4* F'
15 '&M*'?A' A'?' : 2'E' -4' -A5' 12&F.E2?-51?A'D' 46' -'
)2G4' *-' -A5' 2--51' A2*GA-' C' 2&?@515F(' R' 5'
@4* F' &4-' G'$5' *D' -A5' 1'GA-' 46' :4ED 2'&'&G' 46' -A5'
'&,*?-':5' F4&5' A'E' 641' -A5' 6'&5?-' :'-C' '&' -A5' H'&G0?'
F4E'&'4&?K'6

9')4$'*?('-2' 2G&' *' P '# ' :# ' --' F3(' 4&?' DD' ;S;(;S F3@ A ? ' / ' 8 $ ' $-# $ ' #0' ### ' &$-' '#

S : (6

14 E -A'? -'E 5 A5 15 E 2'&5F 4& A'? 5?-2-5? '& -A5 ?4*-A(:A'56 C 2- 4,2(U@'-A 2& 4::2?'4&2 15?'F5&:5 '& 12&2F2(@A515 A5 5&,4C5F -A5 ?4:'5-C 46 A'? 4 F 61'5&F 2&F E ' '-21C '&?-1*:-41(-A5 4*&- F5 5&F' 2 5 64*&F 2+*&F2&- 4::*D2-'4&'& ?:A5E5?641''E D14$B '&G -A5 :4&F'-'4& 46 A'? -5&2&-1C(2&F 46 -A5 &5'GA+4*1B '&G F'?-1':-? 5 -44H G152- '&-515?- '& -A59 62-5 46 -A5 *&641-*&2-5 41'?:4?(&*E514*? '& A'? M*21-51(@A4E A5 ?A'5 F5F 2? 621 2? D4??'+ 5 614E -A5 E51:' 5?? G12?D 46 -A5 '&M*'?'-'4&(@A' 5 A5 ?*DD '5F -52:A51? 2&F 4-A51 5& 'GA-5&5F E52&? 641 :4&$51-'&G 41 :4&6'1EB '&G -A5E '& 2 D*15 62'-A 5 F'?D 2C5F -A5 ?2E5 E2G&'6':5&:5 2&F D146*?5 A4?D'-2 '-C '& A'? '$'&G9 -A2- A5 A2F 2 @2C? F4&5 '? A4*?5 @2? $'?'-5F +C ?*:A '&-5 'G5&- 6415'G&51? 2? :2E5 -4 D2'&(2&F +C -A5 E4?- F'?-'&G*'?A5F 46 A'? :4*&-1CE5&(5?D5:'2 C -A5 C4*&G51 &4+' '-C 2&F :2$2 '51?(@A4 15?41-5F -4 '- 2? -A5 +5?- ?:A44 46 A'GA+15F 2&F H&'GA- C :4*1B -5?C 5 ?A4@5F 2 '$5 C :*1'4?'-C '& 2 -A2- @2? G4'&G 4& 2+142F(H55D'&G*D A'? '&641E2-'4& +C 2& 5JB -5&?'$5:4115?D4&F5&:5@'-A 2G5&-?(@A4E A5 15G* 21 C 5ED 4C5F 641 -A5 D*1D4?5('& -A5 D1'&:'D2 *14D52& :4*1-? A5& -A5 52G*5 46 2E+12C @2? 2F,*?-5F(-A5 T'&G 46 12&:5 2&F -A5 D4D5 @515 F5?'14*? 46 G'$'&G A'E -A5 :4EE2&F 46 -A5 2 '5F 21E'5?M +*- 51F'&2&F A2F '&,*15F A'E -44 ?5&?'+ C -4 :215 -4 ?55 A'E 2- -A5 A52F 46 2 E ' '-21C 641:5 2G2'& '& -2 C 5 @2? 2? '-- 5 F5?'14*? 46 5ED 4C'&G A'E '& D*+ ':' 26'2'1? 2- A4E5(2&F ?*66515F -A5 15E2'&F51 46 A'? F2C? -4 D2?? 2@2C '& F'?-2&- ?5: *?'4&M 2 ?5: *?'4&

A4@5$51(&4- *&D 52?'&G -4 A'E?5 6(&41 *&D146'-2+ 5 -4 4-A51? 9 A5 @41 F :2 5F '- F'?G12:5 2&F -A5 4 FU 4*&- F5 !15&2 5J: 2'E5F(R A5 G44F ?A'D '? ?-12&F5F 2- 2?-(2? D15F':-5F > 4- ?4(K ?2'F 4&?2 $4(-4 @A4E -A5 4+?51$2-'4& @2? 15D41-5F R ?A5 '? ?-' '& 5J:5 5&- -1'E(2&F @2'-? 4& C -A5 1'?'&G 46 -A5 -'F5 -4 +521 2@2C 2? +12$5 C 2? 5$51 K -

1 ? # & #- # 8 #&&#L ; # $ $:#/$ + #
$ /# #C + + +#"? ?$' -- 4FF A 44(A P '# :# ^
0 G # 8 $ ' C -F3B A ? #&$ #0 ### &$-
U ! " # + $ # + '##A #J A $ > - "
'# & + V -# - J A 8# &&#$ /#
#" #' #$ / $ 2 + #' --)))3
&$ $ + #J - 2@@

Z Z

H A ; A :

8

< S > < <

$ A'GAA2&F5F E52?*15?46 51F'&2&F('&15G21F -4-A5 21M*'?46 1'5G4 2&F?4E5 4-A51&4+ 5?('5JB :'-5F G5&512 F'?G*?-2E4&G -A5 ,52 4*?21'?-4:12:C 46 2?-'5 +*- -A5C 2DD521 -4 A2$5 64*&F E415 62$4*1 @'-A -A5 :4E E4&?(@'4 @515 D14+2+ C &4- *&@' '&G -4 ?55 -A2- A2*GA-C +4FC A*E+ 5F(@A':A A2F ?4 46-5& -12ED 5F 4& -A5 1'GA-? 46 '-? '&651'41? 9 ? 2 E2--51 46 D4 ':C(A4@5$51(5$5&@'-A -A5 &4+ 5?(-A'? :4*1?5 F45?&4- ?55E -4 A2$5 +55& E'?:2 :* 2-5F ?'&:5 '- ?A4@5F -A2- -A5 H'&G(@A4?5 -2 5&-? -A5C A2F 2 @2C? 15?D5:-5F(@2? &4@ D4??5??5F 46 D4@51

I ?# * + / L &# >$ /$ #+- #$& G $*L '$? J- # & /$ + >$ G?#&? ? G? - & # $ /? #$ #& & - # * + + ' /#+/ ?# # +-?$? $ &# &$-# $ */$ L $&PJ $&? # & #0 /G# ? ? #$? + # "-$ $+ * ? -$" $?# &&$ # $/ & #- # * ? &#'#& ? L G$? - *&?# / "$# > +$ / K &$- / /G? &$+ + &&J'# $ /9 #"$ $ / ?#+ - # " ? D > * ? '# $ $ 2@E3

-4 5&641:5 4+5F'5&:5(2&F @2? 6* C 15?4 $5F -4 5J51- '-

&F55F(&4-@'-A?-2&F'&G 2 65@ F5$'2-'4&?('- E *?- +5 2 4@5F -A2- 51F'&2&F0? :4&F*:- 4& A'? 15-*1& @2? 5J-15E5 C 5&'5&- 2&F '+512 N E415 5?D5:'2 C(:4&?'F51'&G -A5 ?*+,5:-? 46 D14$4:2-'4& A5 A2F ?*?B -2'&5F '& -A5 D51?4&2 '&?* -? 2&F F5?51-'4& 46 -A4?5 4& @A4E A5 A2F A52D5F ?4 E 2&C 62$4*1? '?-41C 26641F? 65@ 5J2ED 5? 46 ?'E' 21 E4F512-'4& 4& -A5 15?-412-'4& 46 2 +2&'?A5F D1'&:5(41 D21-C & 62:-(2 $'4 5&- 2&F -C12&&':2 :4*1?5 @4* F &4- A2$5 +55& 2G1552+ 5 -4 A'? :A212:-51('& @A':A D2??'4&(A4@5$51 ?-14&G +C &2-*15(@2? A2+'-*2 C ?*+,5:-5F -4 152?4& A5 D15?5&-(2? '- @4* F ?55E(5J:5??'$5 2:-? 46 ?5B $51'-C 215 -4 +5 15G21F5F(-A5156415(&4- 2? -A5 ?2 '5? 46 D51?4&2 15?5&-E5&-(+*- 2? -A5 F':-2-5? 46 2 :2B :*2-'&G D4 ':C('&-5&F5F -4 ?-1'H5 -51141 '&-4 -A5 -*1+*5&- ?D'1-? @A4E 6521 4& C :4* F A4 F '& :A5:H

4 -A'? 5&51G5-':4*1?5 A5 @2? ?-'E* 2-5F(2? @2? ?2'F(+C -A5 :4*&?5 ? 46 Z'E5&5? A'? 5E'&5&- D15 2-5 A2F &4@ 152:A5F -A5 A'GA5?- 5:: 5?'2?-':2 A4&4*1? ?A41- 46 -A5 D2D2:C 44& 26-51 51F'&2&F0? 15?-412-'4&(A5 15:5'$5F 2 :21F'&20? A2- 614E 4D5)*'*? N 9 2&F -A'? @2? 64 4@5F +C A'? 2DD4'&-B E5&- -4 -A5 466':5 46 &M*'?'-41 5&512 46 2?-' 5('& -A5 D2:5 46 5L2(1:A+'?A4D 46 5$' 5 A5 'E.

I 6 0 $# / ?# /#" # >$ &2&F0? 5--51(2D b*'&-2&' 2(? D# "(#&# $ # / # '" :4D'5F 614E -A5 21:A'$5? 46 B ?# '# # $- /#L :22 D5&F 4 <

D41-2&-' 6*&:-'4&?' F5$4 $5F' 4&' A'E' +C' -A5?5' 466':5?(' '&'^%4&,*&:-'4&' @'-A' -A5' D1'E2:C' 46' D2'&(' E'GA-' +5' ?*DD4?5F' -4' 6*1&'?A' 2+*&F2&-' ?*+,5:-' 2&F' ?:4D5' 641' A'?' 2?D'1'&G' ?D'1'-' *-' A'?' $'5@?(' 4&' -A5' :4&-121C(' 5JD2&F5F' @'-A' 5$51C' ?-5D' 46' A'?' 5 5$2-'4&(' 2&F' &4@' 65 ' '-- 5' ?A41-' 46' -A4?5' 46' 2&' '&F5D5&F5&-' E4&21:A' '?' L52 ' G 4@5F' 6'51:51' -A2&' 5$51' 641' -A5' D14D2G2-'4&' 46' -A5' 2-A4 ':' 62'-A' 2F' A5' '$5F' '&' -A5' 2G5' 46' -A5' :1*?2F5?(' A5' @4* F' '&F*+'-2+ C' A2$5' A52F5F' 4&5' 46' -A4?5' 5JD5F'-'4&?' A'E?5 6M' 641' -A5' ?D'1'-' 46' -A5' ?4 F'51' +*1&5F' ?-14&G' 2&F' +1'GA-' *&F51' A'?' E4&2?-':' @55F?9' &F55F(' 'H5' 4 *E+*?(' A5' A2F' 641E5F' D 2&?' 641' -A5'15:4$51C' 46'-A5' 4 C' 5D*:A15(' 5$5&' 2-' -A'?' 2-5' F2C' 16' +*-' A'?' L52 ' 64*&F' 2' +5--51' ?:4D5' '&' 2' :1*?2F5' 2G2'&?-' -A5' &5'GA+4*1'&G' 4? 5E?' 46' 61':2(' @A4' A2F' 15-2 '2-5F' -A5' @14&G?' 46' 12&2F2' +C' 15B D52-5F' F5?:5&-?.' 4&' -A5' ?4*-A51&' :42?-?' 46' -A5' D5&'&B ?* 2(' :2 '&G' '&' $2''" 641' -A5' '&-516515&:5' 46' G4$51&B E5&-' -' -A5' '&?-'G2-'4&(' 2&F' @'-A' -A5' 2'F' 46' Z '.' E5&5?(' 2&' 5JD5F'-'4&' A2F' +55&' 6'--5F' 4*-' ?44&' 26-51

I' UN "' $+ ' / +' #' =' #'?#'+$/ '#*'G'+$>'! /"' $' ! '$&# '& +-$ V' $>' * +' ?' &$ *' ' >'?' ?$/' '$ ' 8 # # K' !'+$"#'$/' 0 =' - & /' *' ?'& $ '$' G '$' #&$' J &# #$' $' $ $' **#& +' ?#' -$' *' - $# ' ?' '! /#& ' $' #+' '#' $ #=' " ' + $ &?' - $# ' #' +#'# '#& #' 0#+#' + #$, ' /' + ' ?' /#*>#'"' K $' *' #' + # '$ '& $ # V' ' ?'- #+$ '0 'G# >'& *# /' 0'8 'H#+ ##'* '5@ ?#+ *' ?#' G '& $/ '#' +' $' *' Q# "' /#$'G?#&?'G '#D >' '+$D' +$ ' *' "$' #'$-- $' 0 ' $' $ '#' ?#' ?$' H#+ ' ?$/' / $' /' G /' ?$' ? ' ' $ # ' ' # ' ?#+' " ? ' G# ?' ? ' ?' #' #' - ' /' #' ? ' Q# "' *' $" ' $ /' "L ? ' $ &?#' ' *' &$ $<' '$' $ /' #' $' & $/' ' ?' 6 >' & ->'#' ; # $ # $' - /' ' $ /' ? ' G$' + &?' + ? / 2B

;

?2+5 2⓪? F52-A(' / 5D-' < -A(' < (7' @A':A' 15?* -5F' '&' -A5' :2D-*15' 46' 2L21M*'$'1(' 2&' 'E D41-2&-' D41-(' 2&F' 641E 'F2+ 5' &5?-' 46' D'12-5?(' 4&' -A5' 21+2'C' :42?-(' &521 C' 4DD4?'-5' 21-A2G5&2' 5' &4@' E5F'-2-5F' 2' E415' F'66':* -' 5&-51D1'?5(' -A5' :4&M*5?-' 46' 12& 9

A'?' D 2:5(' ?'-*2-5F' 2+4*-' 2' 52G*5' 614E' -A5' 641B E51(' @2?' 4&5' 46' -A5' E4?- :4&?'F512+ 5' 46' -A5' 4?B 5E' D4??5??'4&?' '&' -A5' 5F'-5112&52&(' +5'&G' 2' D1'&:'B D2' E21-' 641' -A5' -12F5' 46'-A5' 5$2&-' -' :4&-2'&5F' 2+4*-'; (' '&A2+'-2&-?(' @2?' ?-14&G C' 641-'6'5F(' 2&F' A2F' 2:M*'15F' 2' F5G155' 46' 4D* 5&:5' +C' '-?' 5J-5&?'$5' :4E E51:5(' @A':A' 5&2+ 5F' '-' -4' E2'&-2'&' 2' ?@21E' 46' :1*'?51?' -A2-' ?@5D-' -A'?' '& 2&F' ?52(' 2&F' E2F5' 65216*' F5D15F2-'4&?' 4&' '-?' D4D* 4*?' +41F51? 6

4' ?44&51' @2?' 51F'&2&F' M*'5- C' 5?-2+ '?A5F' 2G2'&' '&' -A5' G4$51&E5&-(' -A2&' Z'E5&5?' *1G5F' A'E' -4' *&B F51-2H5' -A'?' &5@' :4&M*5?-' A5' H'&G' ?2@' '-?' 'E B D41-2&:5(' +*-' 4+,5:-5F' -A5' @2&-' 46'6*&F?' A5' :21B F'&2 (' @A4' @2?' D15D215F' 641' -A'?(' 15D '5F' -A2-' R' A5' @2?' 152FC' -4' 42&.' @A2-5$51' ?*E?' @515' &5:5??21C(' 2&F' -4' -2H5' ?4 5' :A21G5' 46'-A5' 5JD5F'-'4&(' 52F'&G' '-(' '6'-A5' H'&G' D 52?5F(' '&' D51?4&K' 51F'&2&F(' @A4' A2F' &4' 4+,5:-'4&' -4' -A'?' E4F5' 46' E2H'&G' 2:M*'?'-'4&?(' E415' 5?D5:'2 C' 2?' '-' @4* F' 4D5&' 2' $5&-' 641' -A5' -*1B +* 5&-' ?D'1'-?' 46' A'?' ?*+,5:-?(' 152F' C' 2:M*'5?:5F' '&' -A5' D14D4?'-'4&

1' 9 # $' + ' '#' #0' '#' &$-' $ ' ' $ ' 2@E) ' A ' $ #$L H ' A ' ' ' 8 + &# ' ' 0' $' + ' ## ' #0' JJ'### ' &$-' J' ' 8 ' H#+ ' * ')) ' A ' 0 ' #0' JJ#J' &$-' #J :#/$' / ' $ /' # ' &$-' ' ' $ > ' - ' -# ' -' J'## ' A ' 8$ # / K' / ' $ 0$!$ &&&&J'###

= H

A5 5&-51D1'?5(A4@5$51 F'?D14D41-'4&2-5 '- E 'GA- ?55E -4 -A5 15?4*1:5?4 6 2 D1'$2-5 '&F'$'F*2 (@2? &4- +5C4&F -A4?5 4 6 -A5 :21F'&2 5 A2F +55&:215B 6* C A*?+2&F'&G A'? 15$5&*5? 641 ?4E5 -'E5 D2?-(@'-A 2 $'5@ -4 -A'? 4+,5:-M 2 -A4*GA A5 A2F 4::2.9 ?'4&2 C +14H5& '& *D4& A'? 2DD14D1'2-'4&?('& 41F51 -4 15F55E *&641-*&2-5 D2&'21F? @A4 A2F +55& ?@5D- '&-4 ? 2$51C 5 A2F 4+-2'&5F 2::*12-5 ?*1B $5C? 46 -A5 21+21C :42?- 614E 2& -2 '2& 5&G'&551 &2E5F '2&5 ' 5 A2F 2F$'?5F(2? -4 -A5 +5?- E4F5 46 :4&F*:-'&G 4D512-'4&?(@'-A A'? 61'5&F 4&?2 $4 F5 41F4$2(-4 @A4E('6 '- A2F +55& -A5 H'&G0? D 52?*15(A5 @4* F G 2F C A2$5 '&-1*?-5F -A5 :4&F*:- 46 -A5 5JD5F'-'4& - A'? ?*GG5?-'4&(-A2- D4?- @2? &4@ 2??'G&5F -4 -A5 :5 5+12-5F 5&G'&551 4*&- 5. F14 2$2114 9

4 -'E5 @2? 4?- '& :4ED 5-'&G -A5 15M*'?'-5 D15B D212-'4&? 5?'F5? -A5 -2 '2& $5-512&?(5$'5? @515 F12@& 614E 2 M*21-51? 46 -A5 ;4*&-1C(2&F 5?D5:'2 C -A5 :21F'&2 0? 4@& F'4:5?5 A5 :A2D-51 46 4 5F4 5&-515F A521-' C '&-4 A'? $'5@?(6*1&'?A'&G '+512 ?*DD '5?(2&F 46651'&G -4 2::4ED2&C -A5 5JD5F'-'4& '& D51?4& & 2ED 5 -12'& 46 41F&2&:5 @2? D14U :*15F(@'-A D14$'?'4&? 2&F E ' '-21C ?-415? 641 -A5 E2'&-5&2&:5 46 2& 21EC 64*1 E4&-A? 5641 5 -A5 : 4?5 46 ?D1'&G(< (2 @2? '& 152F'&5??(2&F 2 6 55- +6 -5& G2 5C? 2&F 5'GA-C ?E2 51 $5??5 ? 14F5 '& -A5

I ' 8 + &# * 5BA A $ > - -# - A +$ / K 6# &&&&J### A ? #&$ / 8 $ &$- &&J'### A 0 &$- J'## $-# $ #0 ### &$- '##

A21+4*1 46 21-A2G5&2(A2$'&G 4& +421F 2 641:5 2E4*&-'&G '& 2 -4 =(A41?5 2&F < (644- *:A @515 -A5 15?4*1:5?(2:-'$'-C(2&F 5&51GC(F'?B D 2C5F +C 2 E2& @A4?5 '65(*&-' @'-A'& 2 $51C 65@ C521?(A2F +55& ?D5&- '& : 4'?-515F ?4 '-*F5? 2&F -A5 M*'5- D12:-':5? 46 15 'G'4&(2&F @A4 &4@(4DD15??5F @'-A '&6'1E'-'5? E415 -A2& *?*2 (A2F D2??5F -A5 ?5$5&-'5-A C521 46 A'? 2G5

& 2::4ED '?A'&G 2 -A'?(-A5 :21F'&2 A2F 5JD51'B 5&:5F G152-51 4+?-2: 5? -A2& -A4?5 21'?'&G 614E +4F'B C '&6'1E'-C 41 2G5 '? D 2&? A2F +55& :4&?-2&- C F'?:4*12G5F 2&F-A@21-5F +C -A5 &4+ 5?(@A4 F51'F5F -A5 'F52 46 R 2 E4&H 6'GA-'&G -A5 +2-- 5? 46 D2'&(@A' 5 -A5 152- 2D-2'& @2? 56- -4 ?-2C 2- A4E5(2&F :4*&- A'? +52F? 'H5 2 A51E'-K A5 ?4 F'51?(5?D5:'2 C -A4?5 46 -2 C(2? @5 2? -A5'1 :4E E2&F51 2$2114(-12'&5F *&F51 -A5 +2&&51? 46 4&?2 $4(?A4@5F '-- 5 '&: '&2-'4& -4?51$5 *&F51-A5'1 ?D'1'-*2 52F51 A5 H'&G A'E?5 6 @2? :44 5F +C -A5?5 $2B 1'4*? E2&'65?-2-'4&? 46 F'?:4&-5&- *- -A5 ?-41E(@A':A D14?-12-5? -A5 @52H51 ?D'1'-(?51$5? 4& C -4 44- -A5 ?-14&G51 E415 6'1E C '& '-? D*1D4?5N 2&F -A5 (G5&'*? 46 Z'E5&5?(1'?'&G @'-A -A5 4+?-2: 5?U'- A2F -4 5&:4*&-51(6'&2 C ?*::55F5F '& -1'*EDA'&G 4$51 2 ('& 15:4&:' '&G -A5 H'&G(F'?2DD4'&-'&G -A5 &4+ 5?(2&F 15?-41'&G 4+5F'5&:5 2&F F'?:'D '&5 -4 -A5 21EC 9 & -A5 < -A 46 2C < ,' -A5 6 55- @5'GA5F

I 8 + &# * 2EEA ###'&$-'J#J'A +$ / K 2EF A 0 0# -'A'; # = &$-'&&J'###'
$ # $:#/$ / # #0

Z

2&:A41(' 2&F' 4&' -A5' 64 4@'&G'5$5&'&G' 2-' ?*&?5-'152:AB 5F' -A5' 61':2&' D41-' 46' 2L21M*'$'1' 4' -'E5' @2?' 4?-' '&' F'?5E+21H'&G(' 641' -A5' 6'15?' 4&' -A5' A' .-4D?' ?A4@5F' -A2-' -A5' :4*&-1C' @2?' 2 152FC' '&' 2 21E' -' @2?' D14D4?5F' -4' F'15:-' -A5' E2'&' 2--2:H' 2G2'&?-' 2' 46-C' A5'GA-(' 41' 1'FG5' 46' 2&F(' 1'?'&G' +5-@55&' 2L21.' M*'$' 2&F' 12&(' ?4' &521' -A5' 2--51' 2?' 5&-'15 C' -4' :4EE2&F' '-' -' -A5' ?2E5' -'E5(' -A5' 6 55-' @2?' -4' F14D' F4@&' +56415' -A5' 441'?A' :'-C(' 2&F(' +C' 4D5&'&G' 2' +1'?H' :2&&4&2F5(' F'$51-' -A5' 2--5&-'4&' 46' -A5' '&B A2+'-2&-?' 614E' -A5' D1'&:'D2' D4'&-' 46' 2??2* -

?' ?44&' 2?' -A5' D2&'?A' 21EC' A2F' 2&F5F(' 2&F' 641E5F' '&' 41F51' 46' +2-- 5(' Z'E5&5?' E4*&-5F' A'?' E* 5(' 2&F' 14F5' 2 4&G' -A5' 12&H?' 5' @2?' F15??5F' '&' A'?' D4&-'6':2' 14+5?(' @'-A' 2' +5 -5F' ?@41F' 2-' A'?' ?'F5' ' 12&:'?:2&' 61'21' 14F5' +56415' A'E(' +521'&G' 2 46-' -+5' E2??'$5' ?' $51' :14??(' -A5' 21:A'5D'?:4D2' ?-2&F21F' 46' 4 5F4' 14*&F' A'E' @515' 4-A51' +15-A15&' 46' -A5' 41F51(' @521'&G' -A5'1' E4&2?-':' 614:H?(' @'-A' ?:'E'-21?' A2&G'&G' 614E' -A5'1' G'1F 5?' ?' -A5' GA4?- C' :2$2 B :2F5' 2F$2&:5F(' -A5C' 12'?5F' -A5' -1'*EDA2&-' ACE&' 46' 5J' 2' 5G'?(' *&-' ' 2-' 5&G-A' -A5' :21F'&2 (' 2?:5&F'&G' 2' 1'?'&G' G14*&F(' 'ED4?5F' ?' 5&:5(' 2&F' E2F5' 2' +1'56' +*-' 2&'E2-5F' A212&G*5' -4' A'?' ?4 F'51?' 5' 15E'&FB 5F' -A5E' 46' -A5' @14&G?' -A5C' A2F' ?*66515F' 614E' -A5' 4? 5E?(' -A5' F5$2?-2-'4&' 46' -A5'1' :42?-?(' 2&F' -A5'1' +15-A15&' F12GG5F' '&-4' E51:' 5?1'? 2$51C' A5&' A5' A2F' ?*6 :'5&- C' 14*?5F' -A5'1' 15?5&-E5&-' 2G2'&?-' -A5' 5&5E'5?' 46' -A5'1' :4*&-1C' 2&F' 15 'G'4&(' A5' ?-'E* 2-5F' -A5'1' :*D'F'-C' +C' F@5 '&G' 4&' -A5' G4 F5&' ?D4'' @A':A

2@2'-5F -A5E '& -A5 4D'' 5&- :'-C 46 '02& N 2&F A5 :4&: *F5F A'? F'?:4*1?5 @'-A F5: 21'&G(-A2- A5 A2F :4E5 -4 D51' A'? 4@& '65 '& -A5 G44F :2*?5 46 -A5 :14??(2&F 52F -A5E 4& -4 +2-- 5(2? A'? D15F5:5??41? A2F 46-5& F4&5 +56415 A'E 9

A5 $5&512+ 5 2?D5:- 2&F A521-.?-'11'&G 5 4M*5&:5 46 -A5 D1'E2-5 H'&F 5F 2 F55D(15$515&-'2 5&-A*?'2 $2 '& -A5 +4?4E? 46 A'? E21-'2 2*F'5&:5(@A':A ?A4@5F '-?5 6 '& -A5 D1464*&F5?- ?' 5&:5 A5 466':51?(A4@B 5$51(: 4?5F 214*&F A'E 2- -A5 :4&: *?'4& 46 -A5 2FB F15??(2&F +5?4*GA- A'E &4- -4 5JD4?5 A'? ?2:15F D51B ?4& -4 -A5 A2L21F 46 -A5 6'GA-N 15E'&F'&G A'E(-A2- A'? D15?5&:5 @4* F D14+2+ C F4 E415 A21E -A2& G44F(+C F12@'&G 466 -A5 2--5&-'4& 46 -A5 E5& -4 A'? D51?4&2 ?265-C A'? 2?- :4&?'F512-'4& E4$5F -A5 :21F'&2 (@A4(-A4*GA 15 *:-2&- C(:4&?5&-5F -4 15B '&M*'?A -A5 :4EE2&F -4 2$2114(2&F(26-51 *-B -51'&G A'? D21-'&G +5&5F':-'4& 4$51 -A5 D14?-12-5 12&H?(A5 @'-AF15@ -4 -A5 &5'GA+4*1'&G 641-15?? 46 2L21M*'$'1

A5 F2C @2? &4@ 621 ?D5&-(2&F F21H : 4*F? 46 -A5 5&5EC @515 ?55& G2-A51'&G 2 4&G -A5 -4D? 46 -A5 ?'5112(@A':A '- @2? D14D4?5F 6'1?- -4 2--2:H 2B $2114(?55'&G -A'? D4?- ?4 ?-14&G C 4::*D'5F(F4*+-5F @A5-A51 A'? E5& 4* F +5 2+ 5 -4 :211C '- +56415 &'GA-62 ('6 '&F55F 2- 2 (@'-A4*- D15$'4*? 15?- 2&F 15615?AE5&-(26-51 -A5 5JA2*?-'&G 2+4*1? 46 -A5 F2C

9 5E2F5L('?- *+ > $'5F4(b*'&:*2G5&2?(*D>V*1'-2(-4E $' '+ $''' F'2(F5Z'E :2D ZZZ> 4E5:'*?(64 <S

S Z

5 15-*1&5F -A5156415 -4 2L21M*'$'1 -4 -2H5 :4*&?5 46Z'E5&5? A5 2--51 @A4E A5 64*&F 2- A'? F5$4-'4&? +5?4*GA- A'E I &4- -4 62 -51 2- -A'? A4*1 +*- -4 G4 641@21F '& 4F0? &2E5 ?'&:5 +4-A -A5 + 5??5F 2$'4*1 2&F -A5 62 ?5 D14DA5- 2A4E5- :4&?D'15F -4 F5 '$51 -A5 5&5EC '&-4 A'? A2&F?K A5 ?4 F'510? ?:1*D 5? $2&'?A5F +56415 -A5 '&-15D'F +521'&G 46 -A5 D15 2-5 2&F 15-*1&'&G -4 -A5 21EC A5 G2$5 '&?-2&- 41F51? -4 2F$2&:5 9

2C <S 4@ C 2&F ?' 5&- C -A5 D2&'?A -144D? +5G2&-A5'1 2?:5&- *D -A5 ?-55D ?'F5? 46 -A5 ?'5112 *&B F51 -A5 61'5&F C :4$51 46 2 -A':H E'?-(@A':A 14 '&G A52$' C F4@& -A5 ?H'1-? 46 -A5 A' ? ?A'5 F5F -A5E 641 2 -'E5 614E -A5 5C5 46 -A5 5&5EC ?'?44& 2? -A5C 5E51G5F 614E '-(A4@5$51 -A5C @515 ?2 *-5F @'-A ?A4@51? 46 +2 ? 2114@?(2&F 4-A51 F52F C E'??' 5?(64 4@5F +C -A5 F5?D512-5 :A21G5? 46 -A5 441?(@A4(1*?A'&G F4@&(5&F52$4*15F -4 F1'$5 +2:H -A5 2??2' B 2&-? *- -A5C E2F5 &4 'ED15??'4& 4& -A5 4&G D'H5? 2&F F55D 12&H? 46 -A5 2--51 @A':A 15E2'&5F *&?A2H5& 2? 2 14:H -' -A5 &*E+51? 46 -A5 5&5B EC 6* C 5M*2 -4 -A4?5 46 -A5 D2&'21F?(2&F -A5 2F$2&-2G5? 46 -A5'1 D4?'-'4&(5&2+ 5F -A5E -4 F'?D*-5 -A5 G14*&F @'-A 65216* 4+?-'&2:C -' 5&G-A(2B $2114 G4- 2 ?E2 +2--51C 46 A52$C G*&? -4 4D512-5 4& -A5 6 2&H 46 -A5 441? A5 5665:- 46 -A'? E4$5B E5&- @2? ?44& $'?'+5 A5 5JD4?5F ?'F5? 46 -A5 4? 5E :4 *E&(6'&F'&G &4 ?A5 -51 614E -A5 F52F C

9 4E5:'*?(64 < S> J'J .:V*1'-2('+ $*' :2D << > b*'&-2&' 2('+' ' :2D JJJ

b!

$4 5C?(@515 ?A2H5& 2&F -A14@& '&-4 F'?41F51 A5 :4&6*?'4& 5J-5&F5F -4 -A5 52F'&G 6F5?(@A':A &4@(D15??5F A52$' C +C -A5 '14& 2112C 46 ?D521E5& '& -A5 A1'?-'2& $2&(+5G2& -4 G'$5 G14*&F 5-152- @2? ?44& M*':H5&5F '&-4 2 F'?41F51 C 6 'GA- A5 D2B &'21F? D*1?*5F E 2&C 46 -A5E(5?D5:'2 C -A5 12@ 5$'5?(+152H'&G -A5'1 12&H?(2&F 64 4@'&G *D9-A5 6 C'&G 645 @'-A4*- -A5 52?- 15G21F -4 -A5 :4E E2&F? 41 E5&2:5? 46 -A5'1 466':51?M 2 :'1:*E?-2&:5 @A':A E'GA- A2$5 D14$5F 62-2 (A2F -A5 441? A2F ?-15&G-A 41 F'?:'D '&5 -4 12 C ? '- @2?(-A5 ?:2--515F &*E+51? 46 -A5 A1'?-'2&?(E2G&'6C'&G -4 -A5 5C5 -A5'1 152 641:5(?51$5F 4& C -4 '&:152?5 -A5 D2&':(2&F 2::5 512-5 -A5 ?D55F 46 -A5 6*G'-'$5? 9

A' 5 -A'? @2? G4'&G 4&(-A5 6 55- A2F 2&:A415F +5641 5 -A5 :'-C(2&F 4D5&5F 2 $51C A52$C :2&&4&2F5(@A':A @2? 2&?@515F @'-A 5M*2 ?D'1'- 614E ?'J-C D'5:5? 46 21-' 51C @A':A G21&'?A5F -A5 641-'6':2-'4&? A5 -144D? 4& +421F(A4@5$51(E2F5 G44F -A5'1 2&FB '&G(2&F ?44& ,4'&5F -A5E?5 $5? -4 -A5'1 $':-41'4*? :4*&-1CE5& F5?:5&F'&G 614E -A5 ?'5112 A5C -A5& D*?A5F 641@21F '& 2 A2?-5 -4@21F? 12&(D14D4?'&G -4 :211C -A5 D 2F5 +C 5?:2 2F5 A5C @515 D441 C D14$'F5F @'-A 2FF51?(+*- -A5 F5?D512-5 5&51GC 46 -A5 E4E5&- 4$51 52D5F 5$51C 4+?-2: 5M 2&F D 2&-'&G -A5'1 4&G D'H5? 2G2'&?- -A5 @2 ?(41 -A1*?-'&G -A5E '& -A5 :15$':5? 46 -A5 ?-4&5?(-A5C : 2E+515F *D @'-A

9 21-C1(D*? D'?- 5D 5+ 5?- Z'E5& 64 << (<<< ::::J$''' > 5E2F5L(:2D > +21:2(-4E '' 5C JJJ ::J$' ' > $ 4E5:'*?(5 :2D J$'''

S Z

'&:15F'+ 5' F5J-51'-C(' 2 -A4*GA' -A5C' @515' '6--51 C' *&2+ 5' -4' 15D52-' -A5' 652-' -A5' &5J-' F2C' '&' :4 F' + 44F' A5'6'1?-' @A4'G2'&5F' -A5' ?* E E '-' @2?' 4*?2(' :2D-2'&' 46'-A5' :21F'&2 0?' G*21F(' @A4(' ?A4*-'&G'641-A' I' -')2G4' 2&F' Z'E 5&5?(K' *&6*1 5F' A'?' :4 4*1?(' 5EB + 2L4&5F'@'-A' -A5' D1'E 2-50?' 21E?' 4&' 4&5' ?'F5(' 2&F' -A5' :14??' 4&' -A5' 4-A51(' 2&F' D 2&-5F' -A5E' 4&' -A5' +2-B - 5E5&-?' 'J' 4-A51' +2&&51?' @515' ?44&' ?55&' ?-152E.' '&G'614E' -A5' 12E D21-?(' 2&F' -A5' ?4 F'51?' 52D'&G' '&-4' -A5' -4@&' G4-' D4??5??'4&' 46'-A5' G2-5?(' 2&F' -A15@' -A5E' 4D5&' -4' -A5'1' :4E12F5?' A5' @A4 5' 21E C' &4@' 1*?A5F' '&(' ?@55D'&G' 5$51C'-A'&G' +56415' '-' 4E5'65@' 46'-A5' 441?' 5&F52$4*15F' -4' E2H5' A52F' 2G2'&?-' -A5' -'F5(' +*-' E4?-' 6 5F' '&-4' -A5' A4*?5?' 2&F' E4?M*5?'641' D14-5:-'4&' 5?'?-2&:5' 2&F' 6 'GA-' @515' 2 'H5' *&2B $2' '&G' 4' E51:C' @2?' ?A4@&'M' &4' 15?D5:-'641' 2G5' 41' ?5JM' 2&F' -A5' ?4 F'51C' 2+2&F4&5F' -A5E?5 $5?' -4' 2' -A5' -4*-2' ':5&?5' 2&F' 6514:'-C' @A':A' ?55E' -4' ?-2'&' 15 'G'4*?' @21?' 2+4$5' 5$51C' 4-A51' -' @2?' '&' $2'&' 2$2114' :2 5F' -A5E' 466' A5C' 15-*1&5F' 'H5' + 44FA4*&F?' -4' -A5' ? 2*GA-51(' 2&F' &5$51' ? 2:H5&5F(' -' ' 2-' 2?-' @521'5F' @'-A' +*-:A51C(' 2&F' G41G5F' @'-A' -A5' 644F' 2&F' @'&5' 64*&F' '&' -A5' A4*?5?(' -A5C' ?*&H' F4@&'-4' ? 55D' D14E'?:*4*? C' '&' -A5' ?-155-?' 2&F' D*+ ':' ?M*215? 9

A5' ?*&(' @A':A' 4&' -A5' D15:5F'&G' D41&'&G' A2F' ?A5F' '-?' 12C?' 4&' 12&' 6 4*1'?A'&G' '&' 2' -A5' D1'F5' 46

g' ' 4E5:'*?(' *+*' ?*D12 >' :2D' J'J' >' 21+2,2(' &2 5?(5E2 F5L(' :2D' : : J$''' >' '2&4 < > b*'&:*2G5&2? 4+ 5?(' :2D' JJ''' >' ' 21-C1(' F5' $'5F4(' > 2&F-4$2(' '?-(*+*' ?*D12 > b*'&-2&' 2(' '+' ''' F5' 21 4?' '-4E' '' D' <

b ! ‘ ‘ S<

:4E116651:'2‘ 4D* 5&:5(‘ 2&F‘ -55E'&G‘ @'-A‘ 2‘ 6155‘ 2&F‘ '&F*?-1'4*?‘ D4D* 2-'4&(‘&5J-‘14?5‘ 4&‘ '-‘ 2‘ :2D-'$5‘ :'-C(‘ @'-A‘ '-?‘ 6514:'4*?‘ :4&M*5141?‘ ?-15-:A5F‘ '&‘ ? * E+51‘ 4&‘ -A5‘ A52D?‘ 46‘-A5'1‘? 2*GA-515F‘$':-'E? 9‘ 4‘ 5??‘ -A2&‘ 64*1‘-A4*?2&F‘ 4412?‘ @515‘ ?2'F‘ -4‘A2$5‘62 5&‘ '&‘ -A5‘ +2-- 5(‘ 2&F‘ 614E‘ 6'$5‘ -4‘ 5'GA-‘ -A4*?2&F‘ @515‘ E2F5‘ D1'?4&51?‘ A5‘ 4??‘ 46‘ -A5‘ A1'?-'2&?‘ @2?‘ '&:4&?'B F512+ 5‘ ?‘ ?44&‘ 2?‘ -A5‘ D2&'?A‘ :4E E2&F519‘A2F‘ -2H5&‘ -A5‘ &5:5??21C‘ E52?*15?‘ 641‘ : 52&?'&G‘ -A5‘D 2:5‘ 614E‘ '-?‘ 64* ‘ 2&F‘ F'?E2‘ 'ED*1'-'5?(‘ A5‘ ?5&-‘ -4‘ -A5‘ :21F'&2 (‘ 2&F‘ '&$'-5F‘ A'E‘ -4‘ -2H5‘ D4??5??'4&‘ 46‘ '-‘ A5‘ 2--51‘ 5E+21H5F‘ 4&‘ +421F‘A'?‘ G2 5C(‘ 2&F‘ 2?‘ A5‘ :42?-5F‘ 2 4&G‘ -A5‘ E21G'&‘ 46‘ -A5‘ :'-C(‘ 2&F‘ ?2@‘ '-?‘ G2C‘ D2$' '4&?‘ 2&F‘ ?D21H '&G‘ E'&215-?‘ 156 5:-5F‘ '&‘ -A5‘ @2-51?(‘ A'?‘ ?4* ‘ ?@5 5F‘ @'-A‘ ?2-'?62:-'4&‘ 2-‘ -A5‘G 4B 1'4*?‘ 2:M*'?'-'4&‘ A5‘ A2F‘ E2F5‘ 641‘ A1'?-'2&‘ D2'&‘ -‘ ?55E5F‘ '&:15F'+ 5(‘-A2-‘ 2‘ -4@&‘ ?4‘ ?-14&G C‘ E2&&5F‘ 2&F‘ 641-'6'5F‘ ?A4* F‘ A2$5‘ +55&‘ :211'5F‘ ?4‘ 5'2C?'C

?‘ Z'E5&5?‘ 2&F5F(‘ 2&F‘ 5&-515F‘ -A5‘G2-5?(9‘2--5&FB 5F‘ +C‘ A'?‘ -12'&‘ 46‘ E4&H'?A‘ +15-A15&(‘ A5‘ @2?‘ A2' 5F‘ @'-A‘ -A*&F51'&G‘ 2:: 2E2-'4&?‘ +C‘ -A5‘ 21EC‘ 2?‘ -A5‘ -1*5‘ $':-41‘ 46‘ 12&(‘ '&‘ @A4?5‘ +5A2 6‘ 52$5&‘ A2F‘ :4&F5?:5&F5F‘ -4‘ 15D52-‘ -A5‘ ?-*D5&F4*?‘ E'12:5‘ 46‘)4?A*2(‘ +C‘ ?-4DD'&G‘-A5‘?*&‘ '&‘ A'?‘ :21551 If9‘ *-‘ -A5

9‘ R‘ 5F‘ -2&F5E‘ ?412&*?‘ 5J 2+4155‘ 5-‘ $'&4 4A41-*?‘ 54?‘ 4D:‘ D15??'-(5-‘ :1*5&-'?‘ A4?-'*E‘ :2:‘ F2$51'+*?‘ -2&-2‘ ?5:*1'-2-5‘ 5-‘ 6'F*:'2‘ '&F41E'51*&-(‘ *-‘ D51:‘ E*-‘ '&‘ 12&'?‘ *1+'?‘ D2-5'?‘ 2F‘ E*-2E‘ F'5E‘ ?-51-*51'&-K‘ 4E5:'*?(‘ 5‘ 5+‘ 5?-‘ Z'E‘ 64‘ <<<

-‘ 42::4EE4F2-5-A5‘ A1'?B -'2&?(‘ 2?‘ -A5‘ F2C‘ @2?‘ 621‘ 2FB $2&:5F‘@A5&‘ -A5‘ 2:-'4&‘ +5G2&(‘ -A5‘ ?*&‘@2?‘ D51E'--5F‘ -4‘?-2&F ?-'‘ ?5$512‘A4*1?N‘ -A515'?‘?4E5 F'?:15D2&:C‘ 2?‘ -4‘ -A5‘ D15:'?5 &*E+51N‘ E4?-‘2*-A41'-'5?(A4@B 5$51(‘ E2H5‘ '-‘ 64*1‘ A515‘ '?‘ &4‘ E'12:5‘ '&‘ -A5‘ @A45‘ 4E2&

S ; Z

:21F'&2 (' A*E+ C' F'?: 2'E'&G' 2 ' E51'-?' 46' A'?9' 4@&(' @2?' A521F' -4' 15D52-' 2 4*F' -A5' ?*+ 'E5' 2&G*2G5' 46' -A5' D?2 E'?-(' R' 4&' &4+'?(' 4E'&5(' &4&' &4+'?(K' @A' 5' A5' G2$5' A'?' +5&5F':-'4&?' -4' -A5' ?4 F'51C ' 5' @2?' -A5&' :4&F*:-5F' -4' -A5' 2 :2L21(' 2&F' -A5' H5C?' 46'-A5' 641-15??' @515' D*-' '&-4' A'?' A2&F ' A5' ?D4'' 46' -A5' :2D-*15F' :'-C(' 2E4*&-'&G(' 2?' @2?' ?2'F(' -4' A2 6'2' E' B '4&' 46'G4 F' F*:2-?(' -A5' 61*'-' 46' 4&G' ?*::5??6* ' -12F5' 2&F' D'12:C(' @2?' D 2:5F' 2-' A'?' F'?D4?2 ' 641' F'?-1'+*B -'4&'N' +*-' -A2-' @A':A' G2$5' E4?-' ,4C' -4' A'?' A521-' @2?' -A5' '+512-'4&' 46' -A155' A*&F15F' A1'?-'2&' :2DB -'$5?(' @A4' @515' 2&G*'?A'&G' '&' -A5' F*&G54&?' 46' 12&' ' 65@' A4*1?' 26-51' -A5' ?*115&F51(' -A5' E5L*21' 46' 15E5:5&' 211'$5F' @'-A' 2' D4@516*' 15'&641:5E5&-' -4' '-?' 15 '56N' +*-' '&?-2&- C' 15-152-5F' 4&' 521&'&G' -A5' -'F'&G?' 41-*&2-5(' '&F55F(' @2?' '-' -A2-' -A5' +2-- 5' A2F' &4-' +55&' F5655115F' -4' -A5' ?*::55F'&G' F2C ' A'?(' @A':A' E*?-' +5' @A4 C' 2?:1'+5F' -4' Z'E5&5?(' @2?' +C' E4?-' 15655115F' -4' F'15:-' '&?D'12-'4&' b*'-5' 2?' D14+2B + 5' 2&' 5JD 2&2-'4&' E2C' +5' 64*&F' '&' -A5' +4 F&5??' 2&F' 'ED5-*4*?' 5&-A*?'2?E' 46'-A5' :21F'&2 0?' :A212:-51 9

2-A4 ':' +*FG5-' +5--51' $4*:A5F' -A2&' -A'?' -' '?' 15:41F5F' +C' 64*'15C5.@'-&5??5?(' E5&' 46' 521&8 '&G' 2&F' :A212:-51' -' '?' 2--5?-B 5F(' E4154$51(' +C' 2' : 4*F' 46' @'-B &5??5?(' @A4' F5D4?5' -4' A2$5' 15B :5'$5F' '-(' ?4E5' 614E' -12F'-'4&(4-A51?' 614E' F'15:-' :4EE*&':2B -'4&' @'-A' -A5'1' 2&:5?-41?' D15?5&-' '&' -A5' 2:-'4&N' 2&F' @A4' 2 ' 2G155 -A2-' '-' @2?' E2--51' 46' D*+ ':' &4B -41'5-C' 2&F' +5 '56' 2-' -A5' -'E5' 55' -A5' @A4 5' 641E'F2+5' 2112C 46' 5$'F5&:5' ?5-' 641-A' +C' b*'&-2B &' 2(' /D' ; (' 5-' ?5M' 2&F' D5&F' D' < 7' -' @2?' ?:21:5 C' -4 A2$5' +55&' 5JD5:-5F' -A2-' ?4 2?-4*&FB '&G' 2' E'12:5' ?A4* F' 5?:2D5' -A5' &4-':5' 46' 2 ' *14D5(' @A515' '-' E*?-' A2$5' +52&' 2?' 2DD215&-' 2?' 2-' 12&' A'?' *&'$51?2' ?' 5&:5' E2C' +5' -A4*GA-(' '&F55F(' -A5' G152-51' E'12:5' 46'-A5' -@4 9' 5E2 F5L(' ' :2D' &&J'###' > 4+5?(' :2D' JJ## > ' 4E5:' &# ' 64 ' << ' > ' 2&*L2(' '?-

A5 :4&M*5?- 46 12& 4D5&5F *&+4*&F5F ?:4D5 -4 -A5 2E+'-'4& 46 Z'E5&5?(@A4 ?2@ '& 'E2G'&2B -'4& -A5 +2&&51 46 -A5 14??6 42-'&G -1'*EDA2&- 614E -A5 @2 ? 46 5$51C 4?5E :'-C 4& -A5 5F'-5112B &52& 5 5JD51'5&:5F(A4@5$51(?51'4*? 'ED5F'B E5&-? -4 A'? 6*1-A51 D14G15?? 2$2114(2::*?-4E5F -4 2& '&F5D5&F5&- :4EE2&F(:A265F '& +'? D15?5&- ?*+41F'&2-5 ?'-*2-'4&(5?D5:'2 C *&F51 2 ?D'1'-*2 52F51 @A4?5 E'-21C ?:'5&:5 A5,*?- C A5 F '& :4&B -5ED- 5 @2? 2 1*F5(*& 5--515F ?4 F'51(2&F + *&-B C ?D4H5 A'? E'&F -4 -A5 D1'E2-5 5 -4 F A'E(R '? :4EE'??'4& *&F51 A'E -51E'&2-5F @'-A -A5 :2D-*15 46 12&M -A2- -@4 G5&512 ? @515 -44 E2&C '& 4&5 21EC -A2- -A5 :21F'&2 ?A4* F 15?- :4&-5&-B 5F @'-A -A5 2*15 ? A5 A2F 2152FC @4&(2&F('&?-52F 46 D2C'&G -A5 H'&G(G4 A4E5 -4 A'? 64:H(2&F 52$5 6'GA-'&G -4 -A4?5 -4 @A4E -A5 -12F5 +5 4&G5F K9

- @A2- -14+5F -A5 D15 2-5 E415 -A2& -A'? '&B ?4 5&:5 46 A'? G5&512 (@2? 2 5--51 @A':A 65 '&-4 A'? A2&F?(2FF15??5F +C -A5 H'&G -4 4*&- 2$2114('& @A':A A5 15M*5?-5F A'E -4 +5 ?*15 -4 6'&F ?4E5 D15-5&:5 641 F5-2'&'&G -A5 :21F'&2 '& 61':2 2? 4&G 2? A'? D15?5&:5 :4* F +5 E2F5 2&C @2C ?51$':52+ 5 Z'E5&5? A2F G44F 152?4& +56415 -4 655 -A2- -A5 14C2 62$4*1 -4 A'E 64@5F 614E ?56'?A&5?? 12-A51 -A2& 2&C D51?4&2 15G21F A5 H'&G A2F 2@2C? @'?A5F -A5 21:A+'?A4D1': 46 4 5F4 641 A'? 62$4*1'-5(

F5 12G -4E ' ' '+ ' :2D JJ'' 9 5:A'51('?-4''.5 F* 21F > b*'&:*2G5&2? F5 $'5F4(Z'E5&5?(DD S(> +21. > 2&F4$2('?-(F5 214? :2(5C5? F5 12G -4E '' T5C -4E ' ' D < ZZZ :2D J$'*

S= H

2&F &2-*12 ?4&(DA4&?4 46 12G4& 6-51 A'? 15B -*1& 614E 2D 5?(A5 'ED41-*&5F Z'E5&5? -4 15?'G& A'? ?55(2&F 5J:A2&G5 '- @'-A -A2- 46 212G4??2(A5 F +C DA4&?4 M -' 2- 5&G-A -A5 '&F'G&2&- D15 2-5 15B D '5F(R A2- A5 @4* F &5$51 :4&?5&- -4 +21-51 2@2C -A5 F'G&'-'5? 46 -A5 :A*1:AM -A2- '6 A'? A'GA&5?? D15??5F A'E 2&C 6*1-A51(A5 @4* F '&F55F -A14@ *D -A5 D1'E2:C(+*- '- ?A4* F +5 -4 +*1C A'E?5 6 '& -A5 61'210? :5 614E @A':A -A5 M*55& A2F 41'G'&2 C :2 5F A'E K 51F'&2&F(@A4('&F5D5&F5&- 46 -A5 4F'*E 46 ?*:A 2 D14:55F'&G(:4* F ' 26641F -4 D21- @'-A ?4 2+ 5 2 E'&'?-51(H&5@ A'? '&6 5J'+ 5 -5ED51 -44 @5 5$51 -4 15?*E5 -A5 ?*+,5:- 9

'-A ?4E5 152?4&(-A5156415(641 F'?-1*?-'&G -A5 G44F @' 46 A'? ?4$515'G&(Z'E5&5? D*- -A5 @41?- D4??'+ 5 :4&?-1*:-'4& 4& -A5 5JD15??'4&? '& A'? 5--51 5 ?2@ A'E?5 62 E515 -44 '& 51F'&2&F0? A2&F?(-4 +5 *?5F ?4 4&G 2? 4::2?'4& E'GA- ?51$5(@'-A -A5 *-B E4?- '&F'66515&:5 -4 A'? 4@& '&-515?- ?41 :4&$5&'5&:5 A5?5 A*E ' '2-'&G ?*?D':'4&?(-4G5-A51 @'-A -A5 2114B G2&- +521'&G 46 A'? G5&512 (F'?G*?-5F A'E @'-A -A5 6*1-A51 D14?5:*-'4& 46 -A5 5JD5F'-'4&(@A' 5 A5 @2? :4&6'1E5F '& A'? D*1D4?5 46 15-*1&'&G -4 D2'&(2&F 64*&F 2& 4+$'4*? 2D4 4GC 641 '- '& -A5 ?-2-5 46 A'? 4@& A52 -A(-44 '&6'1E -4 5&:4*&-51(@'-A ?265-C(-A5 @2?-'&G A52-? 46 2& 61':2& ?*EE51

) 4$'*?('-2 2G& 4&? F4$2 (46 -A5 D15 2-5(I -A4*GA- '+ ''' D < > $ 4E5:'. A'? 21:A+'?A4D1'. @41-A E415 *?(64 << > 2&F4$2 ('?-(-A2& -A5 G44F G12:5? 46 2 :4$5-B F5 21 4? -4E '' D < > 4*? 4 F E4&21:AK R A5@41-AC+14-A51(K ?2C? 2&B

56415 A'? F5D21-*15 A5 ?* E E4&5F 2$2114 2&F A'? 466':51? 2+4*- A'E(' 2&F(' 26-51 G'$'&G -A5E E*:A G44F :4*&?5 15?D5:-'&G -A5 G4$51&E5&- 2&F F565&:5 46 -A5'1 &65@ 2:M*'?'-'4&?(' A5 D 2:5F 2- -A5'1 F'?D4?2 2& 2ED 5 ?*DD C 46 6*&F? 2&F ?-415?(' 641 -A5 E2'&-5B &2&:5 46 -A5 21EC ?5$512 E4&-A? 5 -A5& 5EB +21H5F(' 2C ;;&F(' &4- @'-A -A5 D4ED4*? 2112C 2&F :'1:*E?-2&:5 46 2 A514 15-*1&'&G 614E A'? :4&M*5?-?(' +*- @'-A 2 65@ F4E5?-':? 4& C(' '& 2& *&21E5F G2B 5C ?A4@'&G(' 2? '- @515(' +C -A'? $51C 2:-(' -A5 G44F 5665:-? 46 A'? 5&-51D1'?5(' '& -A5 ?5:*1'-C @A':A '- +14*GA- -4 -A5 +56415 D51' 4*? &2$'G2-'4& 46 -A5?5 '&B 2&F ?52? 9

D 5&F'F D15D212-'4&? @515 E2F5 641 A'? 15:5DB -'4& '& D2'&(' 2&F A5 @2? '&$'-5F -4 $'?'- -A5 :4*1- 2- 2 2F4 'F(' -4 15:5'$5 -A5 A4E2G5 2&F D*+ ':-5?-'B E4&'2 ? F*5 -4 A'? 5E'&5&- ?51$':5? *- A'? 2EB +'-'4& @2? 46 -44 &4+ 5 2 H'&F -4 +5 F2LL 5F +C -A5 62 ?5 'GA-? 46 2& 5DA5E512 D4D* 21'-C 5 A2F -44 E*:A D1'F5 46 :A212:-51(' '&F55F(' -4 2 4@144E 641 -A5 '&F* G5&:5 46 $2&'-C 5 F5: '&5F -A5?5 :4EB D 'E5&-?(' 2&F A2?-5&5F @'-A4*- 4?? 46 -'E5 -4 A'? 62$4*1'-5 :'-C 46 :2 2 A515 -44 -A5 :'-'L5&?(' 2&J'4*? -4 F4 A'E A4&4*1(' -*1&5F 4*- *&F51 21E? -4 15:5'$5 A'E(' 2&F E2F5 2 +152:A '& -A5 @2 ?(' -A2- A5 E'GA- E2H5 A'? 5&-1C '& 2 ?-C 5 @41-AC 46 2 :4&B M*5141 *- -A'? 2 ?4 A5 F5: '&5F(' :A44?'&G -4 D2?? '&-4 -A5 -4@& +C -A5 15G* 21 2$5&*5(' @'-A &4 D5:*.

9 21-C1(' D*? D'?- 5D :J$''' > b*'&-2&' 2(' '+ ''' ::::JJ > $ 4E5:'*?(' 64 :2D JJ

: F &

S Z

'21 : '1: * E ?-2&: 5 2--5&F'&G A'? 5&-12&: 5(?2$5 4& C
' ?E2 -12'& 46 :2E5 ?(5F +C 61': 2& ? 2$5?(2&F
2F5& @'-A G4 F 2&F ?' $51 D 2-5 614E -A5 E4?M*5? 46
12&(2&F 2 D15: '4*? :4 5:-'4& 46 12+'2& E2&*B
?:1'D-? 641 -A5 '+121C 46 A'? '&62&- *&'$51?'-C 46
:2 2

5 ?A4@5F ?'E' 21 E4F5?-C 2&F ?'ED ':'-C '& A'?
F5D41-E5&- 2&F :4&$51?2-'4& 5 E2F5 &4 2 *B
?'4& -4 -A5 ?-'11'&G ?:5&5? '& @A':A A5 A2F +55& ?4
G 41'4*? C 5&G2G5FM 2&F('64-A51? E2F5 2&C(-*1&5F
-A5 F'?:4*1?5 '&-4 ?4E5 4-A51 :A2&&5 (D21-': * 21 C -4
-A5 :4&F'-'4& 46 A'? :4 5G5('-? F'?:'D '&5(2&F '-5121C
D14G15??(@A':A(@'-A -A5 G152- D14,5:- 641 -A5 D*+B
':2-'4& 46 A'? 62E4*? D4 CG 4- '+ 5(?55E5F &4@ 2 B
E4?- @A4 C -4 2+?41+ A'? 2--5&-'4& 9

'? 6'1?- :215(A4@5$51(@2? -4 $'?'- -A5 62E' '5?
'& A'? F'4:5?5(2&F E'&'?-51 :4&?4 2-'4& 2&F 15 '56(
@A':A A5 F'F '& -A5 E4?- +5&5$4 5&- E2&&51(-4 -A4?5
@A4 @515 ?*6651'&G614E -A5 4?? 46 61'5&F?(@A5-A51
+C F52-A 41 2+?5&:5('& -A5 2-5 :2ED2'G& 41 F'F
A5 '& A'? 2:2F5E':2 15-152- 4?5 ?'GA- 46 -A5 G152-
4+,5:- @A':A A2F ?4 F55D C '&-515?-5F A'E(46 5JB
-5&F'&G -A5 5ED'15 46 -A5 14?? 4$51 61':2 14E
-'E5 -4 -'E5 A5 15E'--5F ?*DD '5? 641 -A5 E2'&-5&2&:5
46 12&M 2&F A5 4?- &4 4DD41-*&'-C 46 ?-'E* 2-'&G
51F'&2&F -4 D14?5:*-5 A'? :4&M*5?-?

A5 2-A4 ':H'&G(A4@5$51(65 - -44 ?5&?'+ C -A5
'ED41-2&:5 46 A'? &5@ D4??5??'4&? -4 15M*'15 ?*:A 2F.

b*'&-2&' 2('+ '''' :2D JJ > V*1'-2(-4E $' '+ $' ' :2D
> $ 4E5:'*?(64 225 2FE JJJ > 4+5?(:2D JJ''

E4&'-'4&' 2&F 4*&- 5F14 2$2114 @2? 6*1&'?A5F @'-A 2ED 5 15?4*1:5? 46 5$51C H'&F(2&F(2+4$5 2 (@'-A -A5 $5-512&? 641E5F *&F51 -A5 5C5 46 4&?2 $4 F5 41F4$2 A*? D 2:5F 4& 2& '&F5D5&F5&- 6'5 F 46 :4&M*5?-(-A5 D2&'?A G5&512 @2? &4- ? 4@ '& D*?A'&G A'? 2F$2&-2G5? '? 6'1?- 5&-51D1'?5 @2? 2G2'&?- *G'2( )2&*21C < -A(< < (@A4?5 H'&G(2- -A5 A52F 46 2 D4@516* 21EC(A5 14*-5F.'& -@4 D'-:A5F +2-- 5?(2&F G4- D4??5??'4& 46 A'? 6 4*1'?A'&G :2D'-2 ( )2&*21C <?- G'51?(5&&5L(15E5:5&(2&F 4-A51 :'-'5? 4& -A5 21+21C :42?-(?*+E'--5F 4&5 26-51 2&4-A51 -4 -A5 D2&'?A 21E? A5 '&A2+'-2&-? @515 15:5'$5F 2? $2??2 ? 46 -A5 2-A4 ':H'&G(5&G2GB '&G -4 D2C -A5 -2J5? *?*2 C 'ED4?5F +C -A5'1 4?B 5E D1'&:5?(2&F -4 ?51$5 A'E '& @21(@'-A -A5 2FF'B -'4& 46 -A5 @A'E?':2 D14$'?'4&(?4 46-5& 64*&F '& -A5 4 F 12&2F'&5 -152-'5?(-4 2--5&F A'E '& :41-5? A5C G*212&-55F(E4154$51(-A5 '+512-'4& 46 2 A1'?-'2& :2D-'$5? '& -A5'1 F4E'&'4&?641 @A':A -A5 G51'&5?(A4@5$51(-44H :215 -4 '&F5E&'6C -A5EB ?5 $5? +C 5J-41-'&G -A5 6* 12&?4E 614E -A5'1)5@'?A 15?'F5&-? -@2? 46 '-- 5 E4E5&- -4 -A5 @15-:A5F ?125 '-5 @A':A D21-C @4& -A5 F2C(A1'?B -'2& 41 *??* E2&M A5 @2? ?*15 -4 +5 ?-1'DD5F '& 5'-A51 :2?5 9

&' -A5 ; -A 46)* C < < (-A5 2&:'5&- :'-C 46

g V*1'-2(-4E C' '+ 'J :2D JJ'' > $ 4E5:'*?(64 ';' :2D ' '' '$ J''' > ' 21-C1(> <;=(> 5E2 F5L(:2D D*? D'?- 5D :::: JJJ$> ::JJ''(> V*1'-2 G'$5? 2- 5&G-A -A5 :2D'-* 2-'4& .@-A G'512 ''' :2D HH > U 21'2&2('+ JJ'J '+ 'J :2D J''' , ,

SS H

1'D4 '(26-51 2 E4?- + 44FC 2&F F5?D512-5 F565&:5(?*115&F515F -4 -A5 21E? 46 -A5 $':-41'4*? G5&512 (@A4?5 &2E5 A2F &4@ +5:4E5 -511'+ 5 2 4&G -A5 @A4 5 &41-A51&' +41F51? 46 61':2 &' -A5 64 4@B '&G E4&-A(A4@5$51(*G*?-' ;S-A(A5 E5-' @'-A 2 ?51'4*? F'?:4E6'-*15 '& -A5 '? 2&F 46 5 $5?(@A515 64*1' -A4*?2&F 46 A'? E5&' @515 ? 2'& 2&F E2F5 D1'B ?4&51? 9 A'? :A5:H '& -A5 +1' '2&-' :21551 46 4*&-' 2$2114(D*-' 2 6'&2 ' ?-4D -4 -A5 D14G15?? 46 -A5 2?B -' '2&' 21E? '& 61':2 *&F51 51F'&2&F 6

?* # &? &? ' 6# ' ' ' $ ' +' ##' --' &' 4@B A '#'0 '! ' ' $ ' ?$' ?#' /# $ ' G$' #+- $0 ' ' '8$ &#$' / ' / ' G? ' ?$/' &?$ " ' * ? ' J- /# # ' $ /' G? ' J-#$ /' ?# ' + # >' G# ?' ?#' #* ' 6 ' G$' / ' ' *' ? ' /' D ' *' '$' $ /'*$L ? ' *' ?$' 0 +$ ' G? ' 0L , >' $&, # /' &?' " +>' & 0 # >' 0>' ?#' & , ' $ /' & # ' I# ' ? ' ? $ / ' ? ' / ' - ' 8$ &#$ ' / ' $' : "$' * ' G ' # & ' ' ? ' ? ' *' / ' # ' ' *' ?#' -$ $ ' #' G?#&?' ? ' + ' ' ? ' /# $ ' /$>' *' 8 ' < I(E' -$ #$' $" #+ $' #' & + ' 0 ' ' ! ' $' ' 8 ' ' -#=' $ / %V ? ' / $?' *' ? ' > "' 0 L +$ ' #' ' # /' / ' $' 0 $ #* ' #+# ' G?#&?' &?$ " '& + -$L # ' G# ?' ?' " $' +$ ' *' $ # ' $ /' $ #$ ' "' * +' G? +' ?' $ ##$ ' 0$ /' / L #' /' #

R' ' ' ' / ' ' $? + $ &$ $'& + ' $' $'+$ # $ & $ / ' >$' ' / & # $'(2 + /# ' /#$< , ' -# / ' '$ " #$'# +$ =' &?$ / '$' $' & ' + /$ / < ' ' ' &$+ - /#$' , /$ ' # # ' 0#$ & ' , (' $ $/ & /$+ '& $/ ' $' -$ =' $' / J$< / ' & $' $ ' ' ($ J$' - $, ' & ' ? + $' ' ' / # $< +$' >$' $' +$/ ' # $' / & #/$/$ ' ' $/ +# # $' $/$' / ' ' $ # , ($' ' $+# ' # '#" ' > < V1 $' $' ' ' > ' ' ' $ $ * &$' $'$M & $'0 $ &$' # -# $ R 0 $' / ' 8$ &# $ < /' / ' 6 L $' --' BE) ' @E3 X' ?' $/ ' +$>' * ' +

A5 15?* -? 2 152FC 4+-2'&5F(A4@5$51(@515 46 G152- 'ED41-2&:5(@A5-A51 @5 :4&?'F51 -A5 $2 *5 46 -A5 2:M*'?'-'4&?(+5'&G ?4E5 46 -A5 E4?- 4D* 5&- E21-? 4& -A5 21+21C :42?-(41 -A5 ?5:*1'-C G2'&5F 641 :4EE51:5(+C ?@55D'&G -A5 5F'-5112&52& 46 -A5 D5?-' 5&- A41F5? 46 E212*F51? @A':A A2F ?4 4&G '&65?-5F '- 4?- 46 -A5 &5@ :4&M*5?-? 5?:2D5F 614E -A5 D2&'?A :14@& '& 2-51 -'E5?(-A14*GA -A5 'E+5:' '-C 41 '&F4 5&:5 46 51F'&2&F0? ?*::5??41? A5 :4&M*5?-? 46 Z'E5&5?(A4@5$51(@515 D2:5F '& ?4 ?-14&G 2 D4?-*15 46 F565&:5(2? -4 15?'?- 5$51C 2--5ED- 641 -A5'1 15:4$51C +C -A5 5&5EC(2&F -4 15E2'& D51E2&5&- C '&:41D412-5F @'-A -A5 D2&'?A 5ED'15 9

& # #> - &# '" ? *$ * / $'$ 6 $* ?#'G ? ? /' $' ?#"?& ++$ /' $ /' +$# $# /'?#' - $# '#' ? G$ * ?$' & >'#+ #' ? G$ $D '0>' ? &?#' ? " $'0$ * $' $' ? "?' ? '&$ & / * /# $ /' ? 'G$' - +# /' $ " #?'#'&$- #'#>' # '? D' ?#' ' " '0>' # # '" #' ? '#& * ?' &?+ $&? * / # '" ?# ? G ' ? ' #" /'?#' $- # $ ' $ /'* +$ >' & /'?#'$ L "#$ &' ? ' $? #&D# "< G? +' 0 # '" $' $'$ '0>' 0# ?' ?'G$' '$' $#' '0L ! &' 6 ' * $ >'* '# ' ?'?$ /' *'?#' G '& >L + '#' ' *' ?' 0 , ' $&# '#' $>'$ /' G$' #+L - # /' $' $- '#' $

' G?#&?' ?' ?$/' ?#+ * + >'"$# /'* +' ?' &?' 6 '?' '$* '/# /'#*'G '$ '0 # ' ' $ + '0 # '" - #L '$ >'/ -$&? /'0>'& ++$ /' *' ?$ ':< ? 'G# '# #L +$ '0>'?#' G '?$ /' 6#' L +$# '*# '/ - # /'#'$' 0=' &# '& + '*' ?'&? &?' *' $' $#$'G '$* G$ /' + 'L /' ' ?'&?$- ' *' ?' " $' 8 $ ' ' $ /'$ - 0 +$ L +'G$' & /' ' ' ? +'0>' ?' # &' *' $'" $ / ' *' ?'? ' 8 + &# '* '2F(A' ' $ ' /' $'$ $' +':' --' FFB' F35' (EBA' $ + ' :# ' / ' 6 ++ ' ' # &'#J' A' 'P '# ' # ' ' :# ' --' 25E' A' 254 I'H#+ '& # /' 'G$ &?' ' ' ?'&# >'?'?$/' ''$#$ >' G ' "'$* '?#' / $?' 6

A'?' ' *?-1'4*?' D15 2-5(' '&' -A5' E52&' @A' 5(' @2?' +*?' C' 4: : *D'5F(' '&' A'?' 15-'15E5&-' 2-' : 2 2'F5' 5&2.' -5?(' @'-A' @2-: A'&G' 4$51' -A5' '&-515?-?' 2&F' 12D'F' F5.' $5 4D5125&-' 46' A'?' '&62&-' *&'$51?'-C' A'?' '&?-'-*B -'4&' @2?' -44' 'ED41-2&-' '&' '-?5 6(' 2&F' 5J51: '?5F' -44' 21G5' 2&' '&6 *5&: 5' 4$51' -A5' '&-5 5: -*2' D14G15??' 46' -A5' : 4*&-1C(' -4' D2??' *&&4-': 5F' '&' 2' A'?-41C' 46' -A5' D15?5&-' 15'G&

?' 621' +2: H' 2?' <= (' Z'E5&5?' A2F' : 4&: 5'$5F' -A5' 'F52' 46' 5?-2+ '?A'&G' 2&' *&'$51?'-C' '&' -A5' 2&: '5&-' -4@&' 46' : 2 2(' @A515' -A5(?2 *+1'-C' 46' -A5' 2'1(' 2&F' -A5' ?4+51(' -12&M*' ' : 4ED 5J'4&' 46' -A5' ?: 5&51C(' 4&' -A5' +52*-'6* ' +41F51?' 46' -A5' 5&215?(' ?55E5F' @5 ' ?*'-5F

' '*$# /' '0' - '#' $L
' *' J $ /# $ >'- # ' '
$ ' ? '"$ '"#"$ #&'*#" '
*'$' + D' / /'#' ? ' 0 '
*'?# ' / ' $ /'G $ # '"'$'&$L
/# $(' ?$ ' G$' ' + #+ '
$D# '"' $ '"' ? ' 0$ + '
$' +#/ #"? ' $ /' $' ? '
+ /' ' $' G?# ' &?$ " '
$ /' 0 $ /# ?# '"' $' $D /' G /'
' ? ' ?#&D' *' ? ' *#"? ' 6# '
$ ' $-- $ $ & ' G$' # ' 2B(4'
G? ' $ ' G$' & >' 0 $L
" /(' 0>' ? ' " # ' '
' ' / >' $G' $' *#" '
+ '# '"' $ '"' ? ' -$ $- ' '
1& $' + #"? ' #"? ' / /'
' $' $ &# &$ ' *#= &D' G# ?' $'
" $(' 0$ '# ' ?# ' ?$ /' '
' $' #' G$' ?$# /'0>' ? ' L
#*# /' /# ' #' &$ /' '?#+' '
U' ' ?' "$ # ' '0' *' /'
? $ '* ' ? ' +>' ? /' '
- '$#' $"$# ' ? + V' 6$'# '"'
/' ? 'G / ' ? '$--$ #L

' '$ # ? /' G# ? ' & + L
>' ' - $ /'# ' '# #' # ' ? '
$+' +$ ' ' ? '* G# '"'
#"? (' / '$'* G' /$> '$* '# '
$ $ & ' G$' ' #*# /' 0>' ? '
$' /# & +*# ' *' ? ' " L
' #' $' 0 />' 0$ ' / '
? 'G$ ' ' ? ' '#/ & ' *'
? ' '$ # ' $--$ # # ' $'
& & /' * ' ? ' /#*#&$ # ' *'
? ' & ' *' + ' 0>' ?$'
- # & ' *'+# $& =+ " ' ; # L
$ # $' -M'42) 44@ 343 4(E.'
? -' &?# ' - $ ' ? ' /'
1G#' (' 1$ ' $' #*' ? ' $ >' 0 L
' /' ? +' 6# ' / 'H#+ L
' #' ' '#.
$ '$* ' # # '"' - $ /'
$ $ ' 0>' ? ' 'G$' $'
" ?' ' + &?' /$+$" /' 0>' $ '
$?, $D '# '2)5E' ?$'# 'G$'
0 / /' $ /'# ' -$ # ?' "$ L
'$ /' - - $ # 'G ' $ L
* /' ' ?' #"?0 # '"' &# >'
*' K , #'#

:

-4 2:2F5E':?-*FC 2&F E5F'-2-'4& 5 5$5& @5&-
?4 621 27 -4 4+-2'& D 2&? 2- -A'? -'E5'641 A'? +*' F'&G?
614E 2 :5 5+12-5F 21:A'-5:- -A51 5&G2G5E5&-?(
A4@5$51(D4?-D4&5F -A5 :4E E5&:5E5&- 46 -A5 @41H
-' < (@A5& -A5 :21F'&2 2'F -A5 :41&51.?-4&5 46
-A5 D1'&:'D2 :4 5G5 A'E?5 6(@'-A 2 ?4 5E& :515E4B
&'2 (9 2&F '&$4:2-'4& 46 -A5 + 5??'&G 46 52$5& 4&
A'? F5?'G&? 14E -A2- A4*1(2E'F?- 2 -A5 5&G14??B
'&G :215? 46 :A*1:A 2&F ?-2-5(A5 &5$51 4?- ?'GA- 46
-A'? G152- 4+,5:- A5&' 2- :2 2(A5 E'GA- +5 615B
M*5&- C ?55& 4& -A5 G14*&F(@'-A -A5 1* 5 '& A'?
A2&F(-2H'&G -A5 2FE52?*15E5&-? 46 -A5 +*' F'&G?(
2&F ?-'E* 2-'&G -A5 '&F*?-1C 46 -A5 @41HE5& +C ?52B
?4&2+ 5 15@21F? P

A5 D 2&? @515 -44 5J-5&?'$5(A4@5$51(-4 2FE'-
46 +5'&G ?D55F' C 2::4ED '?A5F 5?'F5? -A5 D1'&B
&#-$:4 5G5 46 2& F564&?4(&2E5F '& A4&4*1 46
-A5 D2-14& ?2'&- 46 4 5F4(-A515 @515 &'&5 4-A51?(
-4G5-A51 @'-A 2 A4?D'-2 641 -A5 15:5D-'4& 46 '&$2 'F?
2- -A5 *&'$51?'-C A5?5 5F'6':5? @515 +*' - '& -A5
E4?- ?*+?-2&-'2 E2&&51M 2&F ?*:A D21-? 2? 2FE'--5F
46 '-(2? -A5 '+121'5?(1565:-41'5?(2&F :A2D5 ?(@515
6'&'?A5F @'-A 5 5G2&:5(2&F 5$5& ?D 5&F4*1 A5
:'-C 46 :2 2 *&F51@5&- E2&C 'ED41-2&- 2&F 5JD5&B
?'$5 2 -512-'4&?('& 41F51 -4 15&F51 '- E415 @41-AC 46

I ? '& + '*$+##$'$' ? '
- '/$>' *'/ - ## '"& # '
$ /' ? ' D 'G# ?'# &#-M
'0$# '" ?' $+ ' *' ?'
$&?# &' $ /' * / '$ /' /$ '
*' ?'0 #/# "' / ' ?'& L

'G$' 0 ' /' ' ?#' &&$L
'G? '#'#' #& /'$' *'$ L
&# ' $" ' '' (' 8 + -
&# '* 'F3
X &?# '6# # '/ ' $ /'
H#+ ' -'@5)< /'2B54

+5'&G -A5 ?52- 46 2 G152- 2&F 6 4*1'?A'&G *&'$51?'-C A5 ?-2G&2&- @2-51 @2? :211'5F 466 +C F12'&?(-A5 ?-155-? @515 D2$5F(4 F +*' F'&G? 15E4$5F(2&F &5@ 2&F ?D2:'4*? 2$5&*5? -A14@& 4D5&(9

- -A5 5JD'12-'4& 46 5'GA- C521?(-A5 :21F'&2 A2F -A5 ?2-'?62:-'4& 46 ?55'&G -A5 @A4 5 46 A'? $2?- F5?'G& :4ED 5-5F(2&F 5$51C 2D21-E5&- 46 -A5 ?D2:'4*? D' 5 :2156* C 6*1&'?A5F @'-A 2 -A2- @2? 15M*'?'-5 641 -A5 :4E641- 2&F 2::4E E4F2-'4& 46 -A5 ?-*F5&- - @2?('&F55F(2 &4+ 5 5&-51D1'?5(E415 D21-':* 21 C @A5& $'5@5F 2? -A5 @41H 46 2 D1'$2-5 '&F'$'F*2 ? ?*:A '- 12'?5F -A5 F55D5?- 2FE'12-'4& '& 12&:'? (@A5& A5 $'?'-5F -A5 ?D4-(2 65@ C521? 26-51 -A5 :21F'&2 0? F52-A R 4*1 Z'E5&5?(K ?2'F +5(R A2? 5J5:*-5F E415 -A2& ? ?A4* F A2$5 F215F -4 :4&:5'$5 A5 A2? F4&5 @'-A A'? ?'&G 5 A2&F @A2- '& 12&:5 '- A2? :4?- 2 '&5 46 H'&G? -4 2::4ED '?A K6

A5 515:-'4& 46 -A5+*' F'&G?(A4@5$51(F'F &4- -51B E'&2-5 -A5 2+4*1? 46 -A5 D1'E2-5(@A4 &4@ 2??*E5F -A5 -2?H 46 F'G5?-'&G 2 ?:A5E5 46 '&?-1*:-'4& 2&F F'?B :'D '&5 641 A'? '&62&- ?5E'&21C & F4'&G -A'? A5 ?4*GA- 'GA- @A515$51 '- @2? -4 +5 64*&F 2&F +41B 14@5F E2&C(*?56* A'&-? 614E -A5 $5&512+ 5 *&'$51.

1 '# / ; # & $" $ A 0 +- /# / $:#/$ &$- J'# A ; # $ # $ - 2)3 A + $ #& /(-$" ## -- 4E3A 42E A $'$= "# :#$""# # -$" $'*) G? #& -$ #& $ > ? #0 $ > U -# $ /# + # #0 # $ #### 8 &# 6 0 $#&# V

? " / - - $&& / ? &$ /# $ * " $ $ -$ # * 0 # /# "< $ / - # " > $#/ U ? &? &? * / ?$/ ' ?$/ $ 0# ? - * " $ (# ' > ?$ H# + V = &?# - @5)
' 8 + &# * *)5

:

?'-C 46 21'?' '?' ?C?-5E' @2?' 46' -A5' E4?-' 5& 'GA-B 5&5F' H'&F(' +5'&G' F'15:-5F' -4' :2 ' 2 ' -A5' D4@51?' 46' -A5' ?-*F5&-' '&-4' 2:-'4&(' 2&F' &4-' 52$5' A'E' 2' E515' D2??'$5' 15:'D'5&-' '&' -A5' A2&F?' 46' A'?' -52:A51?' 5.' ?'F5?' F2' C' 15:'-2-'4&?' 2&F' 5:-*15?(' A5' @2?' 15M*'1B 5F' -4' -2H5' D21-' '&' D*+ ':' 5J2E'&2-'4&?' 2&F' F'?B :*??'4&?(' ?4' :4&F*:-5F' 2?' -4' D14$5' 5665:-*2 C' A'?' -2 5&-' 2&F' 2:M*'?'-'4&?' &' -A5?5' G 2F'2-41'2' F'?B D 2C?' Z'E 5&5?' -44H' -A5' F55D5?-' '&-515?-(' 2&F' 46-5&' 5&:4*12G5F' -A5' G5&514*?' 5E* 2-'4&' 46' -A5' ?:A4 21' +C' 2--5&F'&G' '&' D51?4&

@4' D14$'?'4&?' E2C' +5' &4-':5F' 2?' :A212:-51'?-':' 46' -A5' E2&' &5(' -A2-' -A5' ?2 21C' 46' 2' D1465??41' ?A4* F' +5' 15G* 2-5F' +C' -A5' &*E+51' 46' A'?' F'?:'D 5?' &B 4-A51(' -A2-' 5$51C' D1465??41' ?A4* F' +5' 155 'G'+ 5' 2-' -A5' 5JD'12-'4&' 46' 5$51C' 64*1' C521?' -' @2?' 'ED4??'+ 5' -A2-' 2&C' ?51$2&-' 46' Z'E 5&5?' ?A4* F' ? 55D' 4&' A'?' D4?- 9

'+512' 64*&F2-'4&?' @515' E2F5' 641' '&F'G5&-' ?-*B F5&-?(' 5?D5:'2 C' '&' F'$'&'-C' &F55F(' -A54 4G':2' ?-*F'5?(' 41' 12-A51' ?*:A' 2' G5&512' :4*1?5' 46' ?-*FC' 2?' ?A4* F' D14D51 C' 5&-51' '&-4' -A5' 5F*:2-'4&' 46' 2' A1'?B -'2&' E'&'?-51(' @2?' -A5' 2$4@5F' 4+,5:-' 46' -A5' '&?-'-*B -'4&' 641' -A5' D2&'?A' :51GC' *D' -4' -A'?' D51'4F(' 2?' +5641 5' &4-':5F(' @515' -449' 46-5&' F56':'5&-' '&' -A5' E4?-' :4EE4&' 5 5E5&-?' 46' 521&'&G' +*-(' '&' -A'?' D15D212B -41C' F'?:'D '&5(' -A5' :4ED15A5&?'$5' E'&F' 46' Z'E 5&5?' 5E+12:5F' &521 C' -A5' @A4 5' :'1: 5' 46' ?:'5&:5?' -2*GA-

= Z

'& 4-A51 *&'$51?'-'5? *- 46 -A5 641-C.-@4 :A2'1?('&F55F(-@5 $5 4& C @515 F5F':2-5F -4 F'$'&'-C 2&F -A5 :2&4& 2@ @A' 5 64*1-55& @515 2DD14D1'2-5F -4 G12 E E21(1A5-41':(2&F -A5 2&:'5&- : 2??':? ?-*F'5?(@A':A D14+2+ C 64*&F 5?D5:'2 62$4*1 @'-A -A5 :21B F'&2 (2? 6*1&'?A'&G -A5 4& C H5C? -4 2 :4115:- :1'-'B :'?E 2&F '&-51D15-2-'4& 46 -A5 :1'D-*15? 9

2$'&G :4ED 5-5F A'? 2112&G5E5&-?(-A5 :21F'&2 ?4*GA- -A5 E4?- :4ED5-5&- 2G5&-? 641 :211C'&G A'? D 2&? '&-4 ◊5J5:*-'4&(21'F -A'? '&F'66515&- C 614E 2+142F 2&F 2- A4E5 '? E'&F @2? -44 46-C 641 &2114@ 4:2 D15,*F':5? 2&F -A5 -155 46 H&4@ 5FG5(A5 H&5@(+415 61*'- '& 5$51C : 'E5 6 5 -44H 5?D5B :'2 :215(-A2- -A5 5E4 *E5&- ?A4* F +5 ?*66':'5&- -4 -5ED- -2 5&- 614E 4+?:E'-C(2&F 614E M*21-51?(A4@B 5$51 15E4-5(@A515 '- @2? -4 +5 64*&F &-A'? A5

$'$"# $> ? &$ /# $ 0 $& /'# + # ' ## # # *'# + ?$ 2@ EEE / &$?$/ # * & '$ L # & + :#$""# *) A L #"# *#& /+ &?*$' G# ?' ? '&$ /# $ 0 :#/$/ 'H#+ '&$-'J'#. 6 -A5?5 D1465??41?A'D?(?'J @515 2DD14D1'2-5F -4 -A54 4GC(?'J -4 :2&4& 2@(64*1 -4 E5F'B :'&5(4&5 -4 2&2-4EC(4&5 -4 ?*1G51C(5'GA- -4 -A5 21-?(2? -A5C @515 :2!5F(5E+12:'&G 4G':(DAC?':?(2&F E5-2DAC?':?(4&5 -4 5-A':?(4&5 -4 E2-A5E2B -':?(64*1 -4 -A5 2&:'5&- 2&B G*2G5?(64*1 -4 1A5-41':(2&F ?'J -4 G12EE21 &5 '? ?-1*:H @'-A -A5 F'?D14D41-'4& 46 -A5 E2-A5E2-':2 ?-*F'5? -4 -A5 15?- A4*GA 2& 'ED41-2&- D21- 46 G5&512 5F*:2-'4&(2&F :4&?5M*5&-C 46 -A5 :4*1?5 5EB 3EA 3F

X $+-# $ # ?# $ -$ # #& ' # >+$# $# ?$? &?$# *' ? #' #> G $ -- # /' 0> $#' -$ #$ / U 'B# -$" $V ? $> *' ? &$ /# $ U $, $ & $ & -#$ /# " $ /% +# #', $ # #&?# / '$ $" $ / # + - $V Y& $ $ - ," $ +'# '## - 2BE .' '$ 8 + K G? * # ? /' G & # $ # $ /- L $ > D G ? - * #' ?'0 '$? # > :#/$'* 3E A 3F

:

@2?' D5165:- C' ?*::5??6* (' 2&F' @5' 6'&F' -A5' *&'$51?'-C' :2-2 4G*5' 2-' -A'?' -'E5' '&?:1'+5F' @'-A' -A5' &2E5?' 46' -A5' E4?-' F'?-'&G*'?A5F' ?:A4 21?' '&' -A5'1' $21'4*?' F5B D21-E5&-?(' E2&C' 46' @A4E' @5' 215' 5&2+ 5F' -4' 2DD15B :'2-5' +C' -A5' 5&F*1'&G' E5E41'2 ?' 46'51*F'-'4&' @A':A' -A5C' A2$5' +5M*52-A5F' -4' *? 9

&')* C' < S(' -A5' :21F'&2' 15:5'$5F' -A5' @5 :4E5' '&-5 'G5&:5' -A2-' A'?' 2:2F5EC' @2?' 4D5&5F' 641' -A5' 2FE'??'4&' 46' D*D' ?'M 2&F' '&' -A5' 64 4@'&G' E4&-A(' -A5' 6'1?-' 5:-*15(' +5'&G' 4&' 1'?-4- 50?' -A':?(' @2?' D*+ ':C' F5 '$515F' -*F5&-?' ?44&' 6 4:H5F' -4' -A5' &5@' *&'$51?'-C(' 2--12:-5F' +C' -A5' 15D*-2-'4&' 46' '-?' D1465??41?(' '-?' 2ED 5' 2DD212-*?(' '-?' -A414*GA' ?C?-5E' 46' '&?-1*:-'4&(' 2&F(' 2+4$5' 2 (' '-?' ?D 5&F'F' D2-14&2G5' 2&F' -A5' A'GA' :A212:-51' 46' '-?' 64*&F51' 5' A2$5' &4' '&641E2-'4&' 46' -A5'1' &*E+51' '&' Z'E5&5?0?' '65-'E5M +*-' '-' E*?-' ?$' ' +55&' $51C' :4&?'F512+ 5(' ?'&:5' &4' 5??' -A2&' ' :2E5' 4*-' -4' 15:5'$5' 12&:'?' ' 4&' A'?' $'?'-' -4' -A5' *&'$51?'-C(' @'-A'&' -@5&-C' C521?' 26-51' '-' @2?' 4D5&5F .6

'$5'C521?' 26-51' -A'?' D51'4F(' < < (' T'&G' 51F'&2&F(' '&' 2&' 5J:*1?'4&' E2F5' 641' -A5' +5&56'-' 46' A'?' F5: '&'&G' A52 -A(' D2'F' 2' $'?'-' -4' :2 2' $51' ?'&:5' A'?' 15-*1&' 614E' 12&(' -A5' :21F'&2 (' F'?G*?-5F' @'-A' D*+ ':' '65(' A2F' 15E2'&5F' @'-A' 2' 65@' +1'56' 5J:5D-'4&?' '&' A'?' 4@&' F'4:5?5(' F5$4-5F' ?4 5C' -4')''?' D51?4&2' 2&F' D1465?.

I' ' $# ' #& ' $' ! /" .' ?' #& ' G#?' #0 $' + '* ' 24 -$ "> #&' ' 0 ' 8 #' '$ ' 8 + K' D G' ' $' H#+ '* ' 3E' ' , *' ? '(+ (& G? ' &? $L ' ; # $ # $' #0' ###' &$-' ?#-' $ /' ?' G$' $' & +- J'##

?'4&2 F*-'5? - @2? @'-A D14*F ?2-'?62:-'4& -A2- A5 &4@ 15:5'$5F A'? ?4$515'G&(2&F 5JA'+'-5F -4 A'E -A5 &4+ 5 -5?-'E4&C 46 -A5 G152- 4+,5:-? -4 @A':A A'? 15-'15E5&- A2F +55& :4&?5:12-5F A5 H'&G(@A4?5 &2-*12 C '&M*'?'-'$5 E'&F &4 ' &5?? :4* F F2ED($'?'-5F 5$51C D21- 46 -A5 5?-2+ '?AE5&-(2&F 2--5&F5F -A5 5J2E'&2-'4&?(2&F '?-5&5F -4 -A5 D*+ ': F'?D*-2-'4&? 46 -A5 ?:A4 21? @'-A '&-515?- '-A '-- 5 521&'&G 46 A'? 4@&(A5 A2F +55& E2F5 -44 46-5& ?5&?'+ 5 46 A'? F56':'5&:'5? &4- -4 2DD15:'2-5 '- '& 4-A51? '? 2:*-5 D51:5D-'4& 152F' C F'?:51&5F -A5 'E E5&?5 +5&56'- -4 A'? H'&GF4E(2&F -A5 G 41C :4&65115F 4& A'? 15'G& +C -A5 2+4*1? 46 A'? 2&:'5&- E'&'?-51(2&F A5 F'F 2ED 5 ,*?-':5 -4 -A5E '& -A5 *&M*2 '6'5F -51E? 46 A'? :4E E5&F2-'4&

- @2? 4& -A'? 4::2?'4& -A2- -A5 15:-41 46 2& F564&?4(-A5 A52F 46 -A5 *&'$51?'-C(:2E5 4*- -4 15:5'$5 -A5 H'&G(D15:5F5F +C A'? *?*2 -12'& 46 2-B -5&F2&-?(@'-A -A5'1 E2:5? 41 @2&F? 46 466':5 A5 14C2 G*21F(2- -A'? 5JA'+'-'4&(:2 5F 4*- -4 -A5E -4 2C 2?'F5 -A5?5 '&?'G&'2(2? *&+5:4E'&G 2&C ?*+,5:- '& -A5 D15?5&:5 46 A'? ?4$515'G& R 4- ?4(K ?2'F 51F'&2&F(@A4 A2F -A5 G44F ?5&?5 -4 D51:5'$5 -A2- E2,5?-C :4* F &4- +5 F5G12F5F +C '-? A4E2G5 -4 5-B -51? &4- ?4 -A'? '? -A5 ?52- 46 -A5 *?5?(2&F -A4?5 @A4 215 '&'-'2-5F('& -A5'1 EC?-51'5? A2$5 -A5 +5?- 1'GA- -4 15'G& A515 K 9

& -A5 E'F?- 46 A'? D15??'&G F*-'5? Z'E5&5? 64*&F

K 4E5:'*?(64 S +# / ? *$+##$ $ &/ * ? $/ G# $/#> &$ Q# " ?$ $ / 0>

-'E5 641 -A5 5J5:*-'4& 46 2&4-A51 @41H(@A':A @4* F 2 4&5 A2$5 +55&?*66':'5&- -4 15&F51 A'? &2E5 'E E41B -2 '& -A5 15D*+ ':4 5--51? A'? @2? A'? 62E4*? '+ 5(41 4ED*-5&?'2& 4 CG 4-(2? *?*2 C -51E5F(614E -A5 D 2:5 @A515 '- @2? D1'&-5F 9 - @2? 4& -A5 D 2&(6'1?- :4&:5'$5F +C 1'G5&(46 5JA'+'-'&G '& 4&5 $'5@ -A5 :1'D-*15? '& -A5'1 $21'4*? 2&:'5&- 2&G*2G5? - @2? 2 @41H 46 ?*1D2??'&G F'66':*-C(F5E2&F'&G 2& 5J-5&?'$5 2&F :1'-':2 2:M*2'&-2&:5 @'-A -A5 E4?- 2&:'5&-(2&F :4&?5M*5&- C -A5 1215?- E2&*?:1'D-? A5 :A212:-51 2&F ?-2-'4& 46 -A5 :21F'&2 266415F5F A'E('-'?-1*5(*&:4EE4& 62:' '-'5? A5 D15:'4*? :4 5:-'4& 46 -A5 2-':2& @2? '+512 C -A14@& 4D5& -4 A'E(5?D5:'2 C *&F51 54 Z(@A4?5 E*&'6':5&- ?D'1'- F5 'GA-5F '& -A5 *&F51-2H'&G 6 5 4+-2'&5F :4D'5? '& 'H5 E2&&51 46 @A2-5$51 @2? 46 $2*5 '& -A5 4-A51 '+121'5? 46 -2 C(. 2&F '&F55F 46 *14D5 G5&512 CM 2&F D2'& ?*DD '5F A'E @'-A 5F'-'4&? 46 -A5 F 5?-2E5&- 46 G152- 2&-'M*'-C(@A':A A2F +55& -152?*15F *D +C -A5 +2&'?A5F ?125 '-5? 9U 4E5

I R &$$ / 6 $ V $> $ > # * ?# $ > U , J #- # J +-$ ## . , #/ + 8 ^&$ $ &#$# $ / 0 + < , # J # $ - # / 0#0# ? &$ $ #, # #+ $+ : # , $+ '# & /#& - , $+ ? +$ $/ +## #V #0 +- " U $J#+$+ V $> ? &$ /# $ # ?# *$& U $0 # # -$ +# $ -#= &#- * # ' $ $+< ' '# + # # " $ +& " ## +# = 0#"$# ?# ? # # -$ #& $ * ? 8 D U , J #- # J +-$ ## . , #/ + 8 ^&$ $ &#$# $ / 0 + < , # J # $ - # / 0#0# ? &$ $ #, # #+ $+ : # , $+ ? +$ $/ +## #V #0 +- " U $J#+$+ V $> ? &$ /# $ # ?# *$& U $0 # # -$ +# $ -#= &#- * # ' $ $+< ' '# + # # " $ +& " ## +# = I R &$$ / 6 $ V $> $ > # * ?# $ > U , J #- # J +-$ ## . , #/ + 8 ^&$ $ &#$# $ / 0 + < , # J # $ - # / 0#0# ? &$ $ #, # #+ $+ : # , $+ ? +$ $/ +## #V #0 +- " U $J#+$+ V $> ? &$ /# $ # ?# *$& U $0 # # -$ +# $ -#= &#- * # ' $ $+< ' '# + # # " $ +& " ## +# = X H#+ $&D G /" ?#

S H #

'F52 E 2C +5 641 E 5F 46 A'? 2$'?A 5JD5&F'-*15 '& -A'? U@2C(614 E -A5 62 :-' -A2-' = G4 F :14@&? @515 D2'F 641 ?5$5&' 6415'G& E 2&*?:1'D-?(@A':A(.A4@5$51(:2 E 5 -44 2-5 -4 +5 46 *?5 '& -A5 :4 E D' 2-'4& 9

A5 :4&F*:-' 46 -A5 @41H @2? '&-1*?-5F -4 &'&5 ?:A4 21?(@5 ?H' 5F '& -A5 2&:'5&-' -4&G*5?(2? E 4?-' 46 -A5 E A2F 5$'&:5F +C @41H? 46 :1'-':2 2:*-5&5?? 2&F 51*F'-'4& 6-51 -A5 2+4*1? 46 -A5 F2C(-A5?5 521&5F ?2G5? @515 2::*?-4 E 5F -4 E 55-('& 41F51 -4 ?5-- 5 -A5 F4*+-? 2&F F'66':* -'5? @A':A A2F 21'?5& '& -A5 :4*1?5 46 -A5'1 15?521:A5?(2&F('& ?A41-(-4 :4 E B D215 -A5 15?* -? 46 -A5'1 4+?51$2-'4&? Z'125&5?(@A4(A4@5$51 'E'-5F A'? 2--2'&E5&-? '& G5&512 '-512-*15(IU @2? 2& 5J:5 5&-' +'+ ':2 :1'-':(615M*5&-B C D15?'F5F(2&F -44H 2 D14 E '&5&-' D21-' '& -A5?5 F5B '+512-'4&? R 4?5' &4 -'E 5(E C 61'5&F?(K A5 @4* F ?2C(I '& -A5 D14?5:*-'4& 46 4*1 G 41'4*? @41H N 5?-('& -A5 :2?*2 -'5? 46 '65(C4*' ?A4* F 4?5 C4*1 D2-14&(41 A2$5 -4 2E5&-' -A5 4?? 46 -A4?5 @A4?5 ?51$':5? 215 46 E 415 D1':5 '& E C 5C5? -A2& @52 -A 2&F @41 FB C A4&4*1? KP

#+ +' - $ + ' ' # ' ' *'?# ' -# ' $ ' !' / &= &$ #"$ # #+$ + # J -$ ' # $ # " $ % -- + V - ' # #+$, ' J + - $ #$ - ' &'### .N 6 ' - $D ' G# ? + ' $ &? >-# ' ?$0 + < , +' /# '# ' $? ' U ' # ' ' , #/ + ' $+' 6 0 +', $+' '# + ' (' J (& + +' 8 & +' $ ' $ # + ' + =' $+ ' $ & # $ ' " "# + V #- #& +' & -#$+ ' '$ ## ' J &# ' - ' & J .' ?# ' G$ ' G # ' ' # ' ++ ' $0 ' & , #= + ' > $ ' $ ' G? ' ? ' ?$/ #'#+ V " ' #0 ' +=' 0 ' D G /" ' *'?#+ - # % ' ; # $ # $ ' #0 ' ### ' &$- ' J ' 1 ' 8 + # ' * ' 45 A ' A ' 8 + &# ' * ' 43 ; # $ # $ ' #0 ' ### ' & ' J ? ') (+- > /' # ' ' $ > ' - $D ' *H#+ ? ' & +-# $ # ' G ' ? ' ' =

F'66':* -'5? 46 -A5 *&F51-2H'&G @515 ?5&?'+ C.
'&:152?5F +C -A4?5 46 -A5 D1'&-'&G A5 21- @2? -A5&
'& '-? '&62&:C(2&F -A515 @515 &4 -CD5? '& D2'&('6
'&F55F '& 2&C D21- 46 *14D5('& -A5 1'5&-2 :A212:B
-51 Z'E5&5?(A4@5$51(:2156* -4 A2$5 -A5 @A4 5
5J5:*-5F *&F51 A'? 4@& 5C5('ED41-5F 21-'?-?U614E
51E2&C(2&F A2F -CD5? :2?- '& -A5 $21'4*? 2&G*2G5?
15M*'15F('& A'? 64*&F1'5? 2- :2 2 9

A5 @41H @A5& :4ED 5-5F 4::*D'5F ?'J $4 *E5?(
64 '4 N6 -A5 64*1 6'1?- F5$4-5F -4 -A5 F 5?-2E5&-(
-A5 6'6-A -4 -A5 5@N -A5 2?- :4&-2'&5F 2 5+15@
2&F A2 F2':$4:2+* 21C(@'-A 4-A51 5 5E5&-21C -152B
-'?5? 46 ?'&G* 21 2+4*1 2&F 521&'&G - @2? &4-
+14*GA- -4 2& 5&F -' < < (6'6-55& C521? 26-51 '-?
:4EE5&:5E5&-(2&F 2 65@ E4&-A? 4& C +5641 5 -A5
F52-A 46 '-? ' *?-1'4*? D14,5:-41 $214 4E5L 15B
2-5? -A2- A5 A2F 46-5& A521F)4A& 14::21'4(-A5
?4& 46 -A5 D1'&-51(U ?2C(-A2- @A5& -A5 2?- ?A55-

$0 0 #J$? $ / *# K # &#$ *G? +
? $/ ?$?$/ + $&L
& <- K/ 9 ###"$ $& L
' #$# * $ + < $ =
? + / $? *$+
8 D + # # $ /
P $ / : "$ $ A $? "?
" # - &#$ > # ? 8 D
$ / $# ? G '! # L
/ $ * 9$+ $
& ' / P G $ / *$+# #$
G# ? ? # $ $ " $" 9$+ $?$? + # * ? -?# "#&$ & + -# $ # $ #' ? 6 0 G $ / ?$ /$#& # ? $ ' + #/ +$ &

- $< +$ / $:#/$ / $ / $ H# +

I ; # $ # $ #0 ### &$- J
? G D G$ #"# $ >
- $? J + > G - #&
* #J / &$ $ / $?$ * $ & ->
*#J #0 > " .
> BEE & -# ? G ' G
&D ** # ? $ 0 & + JL
& /# " > $ $ / '$ $0
&& " # ?$ /
$?#"? $ B4[

! / #$ #$? =
$0# # '# $ /# 8 # +#
/ &$ # $ # #+- #
$"# # +# # 2@2)
P ## /# / &#+ V & #-

@2?' ?-1*:H' 466(' A5(' -A5&' 2' :A' F(' @2?' F15??5F' '&' A'?' +5?-' 2--'15(' 2&F' ?5&-' @'-A' 2' :4DC' -4' -A5' :21F'&2 ' A5' 2--51' 2?' A5' -44H' '-' 12'?5F' A'?' 5C5?' -4' 52$5&(' 2&F' F5$4*- C' 466515F' *D' A'?' -A2&H?' 641' +5'&G' ?D215F' -4' -A5' :4ED 5-'4&' 46' -A'?' G44F' @41H ' A5&' -*1&'&G' -4' A'?' 61'5&F?' @A4' @515' D15?5&-(' A5' ?2'F(' -A2-' R' 46' 2 ' -A5' 2:-?' @A':A' F'?-'&G*'?A5F' A'?' 2FE'&'?-12-'4&(' -A515' @2?' &4&5(' A4@5$51' 21F*4*?(' +5--51' 5&-'- 5F' -4' -A5'1' :4&G12-* 2-'4&' -A2&' -A'? K9

A'?' '?' &4-' -A5' D 2:5(' '6' ' @515' :4ED5-5&-(' -4' F'?B :*??' -A5' E51'-?' 46' -A'?' G152-' @41H(' -A5' 15D*-2-'4&' 46' @A':A' '?' 62E' '21' -4' 5$51C' ?:A4 21' 1'-':?(' '&F55F(' A2$5' F'?D*-5F' -A5' 2&-'M*'-C' 46' -A5' E2&*?:1'D-?' *?5F' '&' -A5' :4ED' 2-'4&(' 2?' @5 ' 2?' -A5' :4115:-&5??' 2&F' $2 *5' 46' -A5' 5E5&F2-'4&? 6' ! &641-*&2-5 C(' -A5' F5B ?-1*:-'4&' 46' -A5' 41'G'&2' E2&*?:1'D-?(' '&' 2' E2&&51

* ?'$ /' $ ' -$ ' *' : ' ' ?#' 0! &' G$' &$ # /' ' # ' 8 +$ >'0 G ' 7 # ' $ /'8 K < ?'* + '#+- " L # "' ? ' $ ' / * /# '" ? ' +- #$' #0 ' ? '&$ L # ' $ /' &$ /#/' #&?$ # ' G? ' - - # ' $-- $' ' ?$' '0 ' ' ?' #/' *8 K ' / &#/' #+$ >'$* '?#' G ' J$+# $ # '#'*$' ' *7 L # '$' "$ /' ?''$ ' *? ' 0' +- > /< ' ? G ' ' $' $ ' ' ?' " $' ' &?$ " ' *' G#* >' $&& ++ /$ # '" ? ' 8 D' J' ' ?' : "$ ' ' ? ' " /'$ /' + # ' *' ? ' & ' >' $-' $?0' #L &?$ # ' /' ' G' ' ' ## ' '#' &?' J## ' '#' -' F' ' S

' ?' - # &#-$' & ' >' 0

@A':A641E?4&546-A5E4?-@A'E?':2 2&5:F4-5? '&
'-5121C A'?-41C(E2H5? '- 'ED4??'+ 5 -4 ?5-- 5 -A5
M*5?-'4& ?2-'?62:-41' C9 !&F4*+-5F C(E2&C + 5EB
'?A5?(E2C +5 :A21G5F 4& '-(&5:5??21' C '&:'F5&- -4
2& 2G5 @A5& -A5 ?:'5&:5 46 :1'-':'?E @2? 'ED5165:- C
&F51?-44F(2&F -A5 ?-4:H 46 E2-51'2 ? @2? E:A
E415 'E'-5F(41 2- 52?- E415 F'66':* - 46 2::5??(
-A2& 2- -A5 D15?5&- F2C 6 6-51 5$51C F5F*:-'4&(
A4@5$51(-A5 :21F'&2 0? '+ 5 A2? -A5 E51'- 46 +5'&G
-A5 6'1?- ?*::5??6* 2--5ED- 2- 2 D4 CG 4- $51?'4& 46
-A5 :1'D-*15?(2&F :4&?5M*5&- C 46 62:' '-2-'&G(5$5&
+C '-? 51141?(-A5 5J5:*-'4& 46 E415 D5165:- 2&F 2-51
@41H? 46 -A5 H'&F%N,% &41 :2& @5 44H 2- '-'& :4&B
&5J'4& @'-A -A5 2G5(2&F -A5 2*?D':5? *&F51 @A':A

1465??41 4F5&A2@51(46
51E2&C($'?'-5F :2 2('&
2)3(* -A5 '&-515?-'&G D*1B
D4?5 46 5J2E'&'&G -A5
?5F '& -A5 4ED-5&?'2& 4B
CG4- 5 -A515 521&5F -A2-
-A5C A2F 2 +55& F'?D4?5F 46(
2? ?4 E*:A @2?-5 D2D51 /E5E
+12&2? '&*-' 5?7(+C -A5 '+121'2&
46 -A2- -'E5(-4 2 14:H5-.E2H51
46 -A5 -4@&(@A4 ?44& @41H5F
-A5E *D '& -A5 15G* 21 @2C 46
A'? $4:2-'4&F 5 2??'G&? &4
152?4& 641 F4*+-'&G -A5 -1*-A 46
-A5 ?-41C A5 &2E5 46 -A5
'+121'2&(*&641-*&2-5C('? &4-
15:41F5F -@4* F A2$5 +55&
2? 'ED51'?A2+5 2? -A2- 46 E21
':A25 '?(/ 21?A(7$4 '''
:A J''?''&4-5
[-R :::5F'-(f?2C -A5 5F'-41?
46 -A5 4CG4-(2F$51-'&G -4
`UA5 + *&F51? 46 521C -12&?:1'+B
51?(R *+':*&M*5 2-'&41*E :4.

F':*E $21'5-2? 5?-(2*- F5D12.
$2-?5 5:-'4&'??*?D'-'4(/'F M*4F
'+121'41*E 'ED51'-'F ?'E*5-
&5G'G5&-'2 615M*5&-'??'E5 2:.
:'F515 $'F5E*?(7 2F D1'E2E
:1'D-*1?5 41'G'&5E 15:*115&F*E
5?-K 14 4G4
P # $0 &?# $//& '$-$L
'-0#?/'#'* *?'$L
&# " $'8 $'#'
2@2B'$'?'*# $> *'$
-> "' # $ $
$#$ $' +'###'-'252.'
'$ '$+-# $ $ $
-$" $' +'##'##'-'F5E.'
G?'/ ' '*$#'' $//' ?#'
+#>' ?'0$&D'&$$ " '
G?#&?'?'?$'+ /'$"$# #
?'#0$#$'*' / $' ?'
?! '*# ' ' *' ?' +L
- #$'#0'G '-# #
0* '2@2B'$? "?' ?'G? '
G D'/#/' '-$'?'-' #'
?'* G# "'> $

: '

'T

= ; H

'-' @2?' 2: : 4 E D '?A5F(' @'-A4*-' 15G21F'&G' '-' 2?' 2' &4+ 5' E 4&* E 5&-' 46' D'5-C(' 521&'&G(' 2&F' E *&'6': 5&: 5(' @A': A' 5&-'- 5?' '-?' 2*-A41' -4' -A5' G12-'-*F5' 46' -A5' @A4 5' A1'?B -'2&' @41 F

*: A' @515' -A5' G'G2&-': ' D14,5: -?' @A': A' 2 E *?5F' -A5' 5'?*15' A4*1?' 46' -A'?' G152-' D15 2-5 ' A4*GA' G'G2&-': (' -A5C' @515' &5'-A51' +5C4&F' A'?' ?-15&G-A' -4' 5J5: *-5(' &41' +5C4&F' -A5' F5 E 2&F?' 46' A'?' 2G5' 2&F' : 4*&-1C ' A5C' @515' &4-' 'H5' -A4?5' @41H?' @A': A(' 641: 5F' '&-4' +5'&G' +C' @A' E (' 41' -12&?'-41C' 'E D* ?5(' D51'?A' @'-A' -A5' +152-A' -A2-' E 2F5' -A5 E ₦ + *-(' -2H'&G' F55D' 144-(' @515' : A51'?A5F' 2&F' '&$'G412-5F' +C' -A5' &2-'4&2 ' ?5&-'B E 5&-(' ?4' 2?' -4' +521' 1': A' 61*'-' 641' D4?-51'-C ' A'?' @2?' D21-': * 21 C' -A5' : 2?5' @'-A' -A5' '&?-'-*-'4&' 2-' : 2 2 ' -' ?44&' +5: 2 E 5' -A5' ?*+,5: -' 46' 14C2 ' 2&F' D1'$2-5' +5&562: -'4&' -?' 64*&F51' +5M*52-A5F' '-(' 2-' A'?' F52-A(' 2' : 521' 15$5&*5' 46' <=(' F*: 2-?' C' -A5' E 'FF 5' 46' -A5' ?5$5&-55&-A' : 5&-*1C(' -A'?' A2F' '&B : 152?5F' -4' = ; ((' 2&F' -A5' : 4 5G5?' E * -'D '5F' 614 E' -5&' -4' -A'1-C.6'$5 9

A5' 1'?'&G' 15D*-2-'4&' 46' -A5' &5@' 2: 2F5 E C(' @A': A' 2--12: -5F' ?-*F5&-?' 614 E' 5$51C' M*21-51' 46' -A5' D5&'&B ?* 2' -4' '-?' A2 ?(' -A152-5&5F' -4' 5: 'D?5' -A5' G 41'5?' 46' -A5' 2&: '5&-' ?5 E '&21C' 2-' 2 2 E 2&: 2(' 2&F' 4: : 2?'4&5F' +'--51',52 4*?'5?' +5-@55&' -A5 E ' A5' 6'5 F' 46' 5--51?(' A4@5$51(' @2?' @'F5' 5&4*GA' 641,+4-A(' 5?D5: '2 C' 2?' -A5' 4&5' @2?' E 415' 'E E 5F'2-5 C' F5$4-5F' -4' -A54 4G': 2

I' ; # $ # $' #0' ###' &$-' & / /' #0 $' " $ ' $ /' #+ + =' J'## A ; # & $" $ ' / ' '# / ' # # ' ' &$ $' ' + ' ?$ ' ' /#$ ' / ' H# + #' ' &&$ # ' 8 + &# ' * _ /# $ /' $ /' $0 $' & =' (4' (@

D15D212-'4&(-4 -A5 5&-'15 5J: *?'4&4 6 :'$' ,*1'?D1*B F5&:5(@A':A 641:5F 2 D14E'&5&- +12&:A 46 '&?-1*:B -'4& 2- -A5 4-A51 &' -A'? ?-2-5 46 -A'&G? -A5'1 1'$2 B 1C(621 614E +5'&G D14F*:-'$5 46 E'?:A'56(E'GA- +5 15G21F5F 2? ?2 *-21C(+C M*':H5&'&G '-5121C 21F4*1(-44 D14&5 -4 2&G*'?A @'-A4*- -A5 ?D*1 46 :4ED5-'B -'4& 'F5 +C ?'F5 -A5 ?'?-51 *&'$51?'-'5? @5&- 641B @21F(F'$'F'&G -A5 D*+ ':D2-14&2G5 2&F 5?-'E2-'4& ? 4&G 2? -A5 G44F 512 46 5--51? 2?-5F '& D2'&(-A5 2:2F5EC 46 Z'E5&5?(*&F51 -A5 '&6 *5&:5 46 '-? 2FE'12+ 5 F'?:'D '&5(E2'&-2'&5F 2 15D*-2-'4& '&651'41 -4 &4&5 4-A51 '& -A5 D5&'&?* 2(9 2&F :4&-'&*5F -4 ?5&F 641-A '-? ?4&? -4 4::*DC -A5 E4?- 5J2 -5F X34?-? '& :A*1:A 2&F ?-2-5(2&F -4 ?A5F -A5 'GA- 46 G5&'*? 2&F ?:'5&:5 4$51 -A5'1 4@& 2&F 6*-*15 2G5? 6

I $ + '# '$ ' '?#' * # /' : "$ $' 2@F) ' - - L $ ' $ 8 D - ' ' ? ' & $ #& $+ ' *' &$ $' # #L +$ # "' ? ' ?#"? ' -# # ' *' ? ' $ ' *' &# & ' ? ' U 8 $=' '#0#' +$ # #+ $/ & ' " $ ' ' ' 6# -$ # ' $/' - # # $+' /# # #' $ / +' ' #' - #+# #' * & #' 8 $ ' + - ' , /' / =' +' - +' $ &# &# ' =' * # * #&#0 ' $ -#&##' #& *=

6415?:'- 4E&' G5&515 ?-*F'4. 1*E(*-',*15 4D-'E4 # M +' 2DD5 215 D4??'E*?0' D'?-4 ?2N 5F < =;(D <

-' b*'&-2&' 2 '? 641 D2??'&G -A5?*E -4-2 46 -A5 G44F @41H? 46 -A5?5 @41-A'5? 46 :2 2 -4 -A5 :15F'- 46 '-? 64*&F51 A5C E'GA- ?51$5 2? 2 E2H5@5'GA- -4 -*1& -A5 ?:2 5 '& 62$4*1 46 A'? +52-'6':2-'4& 'F2('+' '''' :2D' J$''

; . ' ' ;

= =

' Z Z

7 ' ' ' '

< S > < <

$ ' F4E5?-':' A'?-41C' 46' D2'&(' 26-51' 51F'&2&F0? 15?*ED-'4&' 46' -A5' 15G5&:C(' :4&-2'&?' 65@' 15E21H2+ 5' 5$5&-?' -?' 6415'G&' 15 2-'4&?' @515' E415' 'ED41-2&-' A4?5' @'-A' 61':2' A2$5' +55&' 2 152FC' &4-':5F(' 2&F' @5' E*?-' &4@' -*1&' -4' -A4?5' @'-A' -2 C' 2&F' 2$2115

A5' D4??5??'4&' 46' 2D 5?' &5:5??21' C' +14*GA-' 51B F'&2&F' @'-A'&' -A5' ?DA515' 46' -2 '2&' D4 '-':?' 5' ?A4@5F' '-- 5' F'?D4?'-'4&(' A4@5$51(' -4' 2$2'' A'E?5 6' 46''-' 641' -A5' 6*1-A51' 5J-5&?'4&' 46'A'?' :4&M*5?-?' 4&.' ?2 $4(' '&F55F(' F*1'&G' A'?' 2FE'&'?-12-'4&(' E5F'-2-5F' $21'4*?' ?:A5E5?' 641' -A5' 4$51-A14@' 46' -A5' 15&:A' D4@51' '&' -A5' D5&'&?* 2(' +*-' @'-A' 2' $'5@' 12-A51' -4' -A5' D15?51$2-'4&' -A2&' 5& 21G5E5&-' 46'A'?' D15?5&-' 2:B M*'?'-'4&?' 6-51' -A5' -152-C' @'-A' 4*'?' Z ' 5$5&' -A5?5' F5?'G&?' @515' 2+2&F4&5F(' 2&F' -A5' 2-A4 ':' E4&B 21:A' ?55E5F' @A4 C' 4::*D'5F' @'-A' -A5' '&-51&2' 2662'1?' 46' A'?' H'&GF4E(' 2&F' -A5' 5?-2+ '?AE5&-' 46'A'?' 1'?'&G' 5ED'15' '&' 6'.':2 9

I' 8 #&&#$ /# #' 2 ' /($#$' ' 23E4 A 9 #$' +' '#' #0' + ###' #0' '' -' F@).' /' #$=' '#' &$-' '##' #J' '$#0

' ' ' ' =

A5' :12$'&G' 2DD5-'-5' 46' 4*'?' Z ('4&'-A5' 4-A51' A2&F(' ?A21D5&5F' +C' -A5' 4??' 46' 2D 5?(' ?4*GA-' -4' '&F5E&'6C' '-?5 6' +C' E415' 2ED 5' 2:M*'?'-'4&?' '&' -A5' &41-A' ?'621'+2:H'2?'< =('A5'A2F'2112&G5F'2'D 2&' @'-A'-A5'5ED5141'641'-A5'D21-'-'4&'46'-A5':4&-'&5&-2' D4??5??'4&?'46' 5&':5('&-14F*:'&G''-''&-'4&5'46'-A4?5' 2+41-'$5'-152-'5?'2-' 4'?'641'-A5'E211'2G5'46'A'?' F2*GA-51 9' A5':A5E5''?'?2'F'-4'A2$5'+55&':4EB E*&':2-5F'-4' 51F'&2&F''&'-A5'14C2''&-51$'5@'2-' 2$4&2' 4''EE5F'2-5'2:-'4&'64 4@5F('2&F''-' ?55E?'D14+2+ 5'-A2-'-A5' 2--51'E4&21:A('@'-A'A'?' *?*2' :'1:*E?D5:-'4&(' 15?51$5F'A'?' F5:'?'4&' *&-'' A5'?A4* F'+5'E415':521 C'?2-'?6'5F'46'-A5'2F$2&-2G5?' -4'A'E?5 6"j[

-' 5&G-A'-A5'D14,5:-5F'D21-'-'4&'@2?'F56'&'-5 C' ?5--5F(' 5:5E+51'<-A('<S('+C'-A5':5 5+12-5F' -152-C'46' 2'&+12C('+5-@55&' 4*'?'Z ' 2&F'-A5' ED5141' 2J'E''2&('&'@A':A'-A5'D4D5'T'&G' 51F'&2&F('2&F'2 ' D1'&:5?'@A4'A2F'2&C':2'E?'641' ?D4'2-'4&?'+C'-A5' 5&5-'2&?('@515'&$'-5F'-4'-2H5' D21-' A5'?A215'46'-A5'?D4''2??'G&5F'-4'-A5' 2-A4B ':' E4&21:A'@2?'-A5'6'$5' 52D4'-2&':'-'5?(' 12&'(' 1'&F'?'(' 2 'D4'(' *'G&2&4('2&F' -12&-4('D 5FG5F' -4' 5&'55'641':4&?'F512+ 5'?*E?'2F$2&:5F'+C'A51' F*1'&G'-A5'2-5'@21X' A5'D2&'?A':4*1-('2&F('&4-' 4&G'26-5U‰)*'*?' ' 12-'6'5F'-A5'-152-C(' 2-A4*GA''-' 2?'&'F'15:-':4&-12$5&-'4&'46'-A5'2$4@5F'D*1D4?5'46

I' + ' -' #- +$L ' 8 #&&#$ /# #' +'#''-')3' #, ' +'#'' '#' ' >' P' $ $ ' +'#' #0'##'-' $ $ ' 6# ' /' $' #- +' ;S A + ' -' #- +$L $ M' +'#'--';S;(';S #, ' +'#'' $ '#' ' ;

= 7

-A5 D4&-'66(-4 :A2?5 -A5 (614E -2 C -
@2? A'? +4 F D4 ':C(A4@5$51(-4 E2H5 *?5 46 -A5E
6'1?- 641 -A5 2GG12&F'L5E5&- 46 -A5 :A*1:A(2&F
-A5& -4 -1*?- -4 A'? 2*GE5&-5F ?-15&G-A 2&F E415
62$4*12+ 5 4DD41-*&'-'5? 641 512F':2-'&G -A5E 2
-4G5-A51

5$51 @2? -A515 2 D14,5:- E415 F5?-'-*-5 46 D1'&
:'D 5 41 ?4*&F D4 ':C A515 @2? &4- 4&5 46 -A5
:4&-12:-'&G D21-'5? @A4 @2? &4- 2- -A2- $51C -'E5
'&: 4?5 2 '2&:5 @'-A -A5 ?-2-5(-A5 F'?E5E+51E5&-
46 @A':A A5 @2? D 4--'&G ? 2 E2--51 46 D4 ':C('-
@5&- -4 +152 :F4@& -A5 D1'&:'D2 +211'51 4& @A':A
52:A 46 -A5?5 D4@51? :4* F 15 C 641 H55D'&G '&:A5:H
-A5 4$51@55&'&G 2E+'-'4& 46 '-? &5'GA+4*1?(2&F
E2'&-2'&'&G -A5 +2 2&:5 46 -2 C 9 A5 2 21E 46
5&':5 @2? M*'5-5F 641 2 -'E5 +C 2??*12&:5? 614E -A5
:4*1-? 46 12&:5 2&F D2'&(-A2- -A5 52G*5 @2?
?4 5 C F'15:-5F 2G2'&?- -A5 *1H?(2::4ED2&'5F +C
-A5 E4?- ACD4:1'-':2 D1465??'4&? 46 G44F @' (2&F
2E':2+ 5 46651? -4 -A5 15D*+ ':6

A5 D152E+ 5 46 -A5 -152-C F5: 215?(-A2- '- +5'&G
-A5 '&-5&-'4& 46 -A5 2 '5? -4 ?*DD41- -A5 D4D5 '& 2
:1*?2F5 2G2'&?- -A5 '&6'F5 (-A5C 6'1?- D14D4?5F -4 15B
:4$51 614E 5&':5 -A5 -511'-41'5? 46 @A':A ?A5 A2F
F5?D4' 5F -A5 :A*1:A 2&F 4-A51 D4@51?(-4 -A5 E2&'B
65?- A'&F12&:5 46 -A5?5 D'4*? F5?'G&? A5 E415

I ?# $ " + /' 0> X 6# / $ #" / $+=
$&?#$' # $"$# # C -L 0 $> + '#' --' BB B) A '*'
G# ? : #& $-- # G# ? / $:# $ /# $: '*
' '* & ' / ' ? ? B 4) A 8 #&&#$ /# #'
$ # - ' # &#- ' &$- /C $ + '#' -'2(2=M +0
: # #K + '## #0 '##

' ' ' '

6 2G'-'4*?' -A5' E5F'-2-5F' 5&-51D1'?5(' -A5' F55D51' @2?' -A5' $5' ' 46' ACD4:1'?C' -A14@&' 4$51' '-' '&' -A'?' :411*D-' 2G5' A5' -1*5' 152?4&?' 641' -A5' :4&65F512:C' 215' -4' +5' 64*&F' '&' 2' ?D55: ^' F5 '$515F' 2-' -A5' 51E2&' F'5-'' ?4E5' -'E5' 26-51(' +C' -A5' 15&:A' E'&'?-51' 5 '2&' R' 5(K' A5' 15E21H?(' 26-51' 5&*E512-'&G' $21'4*?U5&41B E'-'5?' 46' -A5' 15D*+ ':(' I'@5' @521' &4' 6'&5' D*1D 5M' 652?-' 614E' &4'?*ED-*4*?' ?51$':5?' 46' D 2-5'M' A2$5' &4' :46651?' 4$516 4@'&G' @'-A' G4 F' 5' 215' +21+21'2&?9' *15 C(K' A5' :4&-'&*5?' '&' 2&4-A51' D 2:5(' R '6' '-' '?' F514G2-41C' -4' D1'&:5?' -4' 2:-' -A5' D21-' 46' E51:A2&-?(' '-' '?' *&+5:4E'&G' '&' E51:A2&-?' -4' 2??*E5' -A5' ?-2-5' 46' D1'&:5? K9' A'?(' -A5&(' @2?' -A5' -1*5' H5C' -4' -A5' :4&B ?D'12:C' 2G2'&?-' 5&':5M' 5&$C' 46' A51' ?*D51'41' @52 -A' 2&F' E2G&'6':5&:5(' A2-15F' 5&G5&F515F' +C' A51' -44' 21B 14G2&-' +521'&G(' 2&F' 2?- C' -A5' 5$' ' 5C5' @'-A' @A':A' H'&G?' &2-*12 ! U .15G21F' -A5' E4$5E5&-?' 46' 2&' 2:-'$5(' 2?D'1'&G' 15D ! + ': 6

4' ?5:*15' -A5' :44D512-'4&' 46' 415&:5(' -A5' T'&G?

I' ' $' #0 $' J $&' * +' ?#' ?$ $ " ' $-' $ ' 6# ' / ' : # ' + '### #' ' JJ### A' ' $-' ' ' 6# ' / ' $' #" ' / ' $+0 $>' + '#' -' F(E' ' , A ?' /' - ' P $' $ ' + ' -' ?' # ' *' ?' - 0#&' # ' ?' * G# '"

U' ' # ' C ' , ' ' &C ' '& $ & V

' ' / 'P $' ' + ' $ ' + ' ' -')2

X' ' ?' /# " # /' $ # =' *$& !# G# ?' G?#&?' $ > ' $

$ ' - /#& ' -' &&&&J .' ?$ $ ' $' 6# ' / ' : # ' + '### #' ' JJ### A' & / ' ?' ? +# #$ # ' *' : L #& ' #$' #0'#' ' -' 23) .' ?' $ "$ &' *' ?' #'$' L - 0#&/ ' ' &$-' ?' $ #L #&$' $?' *' $&?#$' #< U' $ ' $ & ' #+- ' /' #+- ' / / # ?$' ' +- ' ' ' '# ' - --$ ' # & /' /# '# $ ' " . /' '#/ / '& + ' $' - K$' --$' $' &#'$ V C # ' /C ; '&$-# ' '

= S

46 12&:5 2&F D2'& 2G155F -4 @'-AF12@ -A5'1 D14B -5:-'4& 614E '?2(641 2 ?-'D* 2-5F ?*E 46 E4&5C A515 '? &4-A'&G '& -A5 @A4 5 A'?-41C 46 -A5 E51B :A2&- D1'&:5? 46 5&':5 ?4 E51:5&21C 2&F +2?5 2? -A'? +21-51'&G 2@2C 641 G4 F -A5 '&F5D5&F5&:5 641 @A':A -A'? '-- 5 15D*+ ':A2F +55& ?4 &4+ C :4&-5&FB '&G 641 E415 -A2& 64*1-55& C521? 9

21 C '& D1' < (4*'? Z :14??5F -A5 D? 2- -A5 A52F 46 2 641:5 @A':A +415 F4@& 2! 4DD4?'B -'4& '-C 2&F :2?- 5 65 +5 6415 A'E M 2&F A'? F5B E52&4*1 -4 -A5 $2&M*'?A5F(4$51 @A4E A5 A2F &4 1'GA-? +5C4&F -A5 41F'&21C 4&5? 46 @21(@2? -A2- 46 2& '&:5&?5F E2?-51 -2H'&G $5&G52&:5 4& A'? 15+5 B '4*? $2??2 ? &' 15$5&G5 641 A'? F5-5&-'4& +5 6415 5?:A'512(A5 A*&G -A5 5&5-'2& G4$51&41 2&F A'? ?4& 614E -A5 +2-- 5E5&-? A'? @2? 2& 4*-12G5 4& -A5 2@? 46 :A'$2 1C(@A':A(A4@5$51 A21F -A5C +415 4& -A5 D52?2&-(15?D5:-5F -A4?5 046 A'GA F5B G155 4*'?0? 12&H(2&F A'? A521-' '-' ?55E?(*&A2DB D' C 12'?5F A'E 5M*2 C 2+4$5 ?CED2-AC @'-A 5'-A51 : 2?? 6

I $ #$ $ 6# #0 JJ#J / + *'? ?# ? L &$- H: A &#- + +# $ =
$0 $ $& # /' # ? -$>+ *' ? - &#' $=
+ ### #0 JJ'### F3B A $ > + ? >$! 00
- -# - &&&&JJ### ? @E EEE J& *' # C
H G$ # $ #$ & - # 0 # "' D - $ - * /
G# ?' & 0 # # /' & '* +' /# $ /'G? 'G$
2EE EEE / &$ $? - #& *' +$/ 0 # ' 0> ? -$ #
?# $&, # & & # ? & ' > ?$?# I$ > & #' /' > $
*' # $ /# $ /' $? #D +' G# ?' ?#+ *' 8 #&L
?# " $ 8 $ ' / / L &#$ /# #' 2 /C $ +'#' --
'$?$/' $D # $ / ?#)3' 3E' 2@ 2@)
- & # $ /' ? D# "' # # /' X +' / ? ' $>$ /'
@E EEE / &$ * ?# 0 L &?$-' HHH' A +' / =

&' -A5' <=-A' 46' 2C' < (' @2?' 64*GA-' -A5' + 44FC' +2-- 5' 46' G&2F5 (' @A':A' +14H5' -A5' D4@51' 46' 5&':5(' 2&F' 2-' 4&:5' F5:'F5F' -A5' 62-5' 46' -A5' @21 9' 51F'B &2&F' A2F' :4&-1'+*-5F' &4-A'&G' -4' -A5?5' 4D512-'4&?(' 5J:5D-' +C' A'?' F'$51?'4&' 4&' -A5' ?'F5' 46' 2D 5?(' @A515' A5' D4??5??5F' A'E?5 6'@'-A4*-' F'66':* -C' 46' -A5' :'-'5?' 2 4--5F' -4' A'?' ?A215' .' A5C' @515' -A5' :A52D5?-(' 2&F(' '6'&4-' -A5' E4?-' $2 *2+ 5(' @515' -A5' E4?-' D51E2&5&-' 2:M*'?'-'4&?' 46' -A5' @21(' +5'&G' 15'&:41D412-5F' '&' -A5' E4&21:AC' 46' 2D 5?

A5&' 64 4@5F' -A5' E5E412+ 5' F5:155' +C' @A':A' 5&':5' 15 52?5F' A51' :4&-'&5&-2' D14$'&:5?' 614E' -A5'1' 2 5G'2&:5(' 2*-A41'L'&G' -A5E' -4' D14$'F5' '&' 2&C' @2C' -A5C' :4* F' 641' -A5'1' ?265-CM' 2' E52?*15' @A':A(' @A5B -A51' 41'G'&2-'&G' '&' D2&':' 41' D4 ':C(' @2?' D5165:- C' :4&?4&2&-' @'-A' -A5' 2--51M6' A5' :4&65F512-5?(' @A4

$ " ' &?$-' '### A 8 #&&#$ /# #' +'#'' -' 234
P $' $ '/ &#0 ' ?' J L
& # '#' ?'* G# '" & '$ /' ++$ >' >
!' ' &?$ $# '/' $' $ #
'&$-# $#
'$/ # # ' - '
'# $#
; (# ' *# ' $' ? $ '
* ' -#' ' $ " K
#'/ '$ ' ' '+ /'
- / ' ' $ " KR'
' ' +' '-' 2@3'
1' ?'* ' $&& ' - L
0$0 >' *' ?' $& # '#'#' ?'
: >$" '/': # '*P $' $L
' ' ' +''--' 2F('
A 245 .' ## '-# '*' &?'
"' # &' &#- /'0>'?#'+ '
- # ? /' ' $&& +-$ # /' ?#
+$ ' #'H '#' ?' $#$ '
J- /# # ' $' ?#' - '&? #L
& <' $ /' ?' 0! &' ?$' #&# L
/' &&$ # $ >' + ' -$ D' *'
- #&' *# ' ? "?' &D' '
G# ?'$' /' ?$ /' ?'- +'
#' @' & &# # '#'#' *$& '
$ /'/$ ' ?$'#'#'& ++ / /'
0>'$' &?' & # #&' $' ?'+ '
J$&' & /' *'?' $#$ '&$+L
-$#" ' 0#/' +$, '-'
2B<' /' 2)42
*' #" ' ?# #$ '#+- '
?#'+ $ +0' ' ?'* + '+ L
#' ' ?': #$ ' ' ?' $L
' ?' & ' $ /' / #0 $ '
& / &' *' ?#' " ' + '
* +' G?#&?' $ '-$ # ' ' '
?' $ " $" ' *' ?' 00 ' '
' + ' ?$' '0 '0$ # ?L
/'+$>'$? #K ' '$&, # =

=<

A2F 15E2'&5F *&'-5F F*1'&G -A5 :A2?5(?44& M*21B
15 5F 4$51 -A5 F'$'?'4& 46 -A5 ?D4' & :'5&- ,52B
4*?'5? 15$'$5F A5 15D*+ ':(@'-A :44 2&F :4&B
?* E E2-5 F'D 4E2:C(2$2' 5F A51?5 6 46 -A'? ?-2-5 46
655 '&G

4D5) * '*?(@A4 A2F G2'&5F 2 A5 D14D4?52(2&F
@2? ?2-'?6'5F@'-A -A5 A* E ' '2-'4& 46 5&':5(&4@'65 -
2 A'? 641E51 2&-'D2-A'5? 2&F F'?-1*?- 46 -A5 15&:A
15-*1& '& 6* 641:5 A5 1'?'&G 6 2E5 @2? F' 'B
G5&- C 62&&5F +C -A5 21-6* 5E'??21'5? 46 -A5 15D*+B
':(@A4 2- 5&G-A 5665:-5F 2 15:4&:' '2-'4& 4& A51 +5B
A2 6 @'-A -A5 A2*GA-C D4&-'66 A5 2--51(A2$'&G
-2H5& -A'? F'15:-'4&(@5&- 641@21F '& '- @'-A A'?
*?*2 'ED5-*4?'-C 5 D 2&&5F 2 &5@ :42 '-'4& 641
-A5 5JD* ?'4& 46 -A5 15&:A(:2 '&G 4& -A5 4-A51
2 '5? -4 -2H5 D21- '& '- 4*'? 15-2 '2-5F +C ?* EB
E4&'&G 2 :4*&:' -4 '&M*'15 '&-4 -A5 D4D50? :4&F*:-(
2&F +C E21:A'&G A'? -144D? '&-4 -A5 -511'-41'5? 46 -A5
:A*1:A U

2C ;<?-(< << A5 2F$2&:5 46 -A5 15&:A(
@A4 A2F &4@ G4- D4??5??'4& 46 4 4G&2(2 21E5F
51F'&2&F 5 A2F ?5:*15F -A5 4+,5:-? 641 @A':A
A5 A2F 5&-515F '&-4 -A5 @21(2&F @2? 42-A -4 +5 F'B
$51-5F 614E 5&-51D1'?5? '& @A':A A5 @2? '&-515?-5F
&52151 A4E5 I H&4@ &4-(K @1'-5? 5-51 21-C1

& & # ? $ + + '## A $ > - -# *$ # " ? $ # $''$ # > -'&&&&J'# A 8 #&&#$ /# #' + ? /# & # $- 6# / #' - -) 2) 3 2) 5 25E 252! $ #" / $+0 $> - 2FB + :' - -)2 G A 3B A , (? / +0 :# #K #0 '## #J I +$ / K '&$- '&&JJ# H
A + # / $ " '&?$-

2-' -A'?' -'E 5(' R' @A2-' -A5' H'&G' @' ' F5:'F5' 4&' 5' '?' '&-5&-' 4&' 64 4@'&G' *D' A'?' 61':2&' :4&M*5?-?' 5' 655 ?' &2-*12 ' 15 *:-2&:5' 2-' +152H'&G' @'-A' A'?' 15&:A' 2 C' +*-' ' F4' &4-' @5 ' ?55' A4@' A5' :2&' 2$4'F' ?*DB D41-'&G' -A5' D4D5' 2&F' -A5' :A*1:A(' &4-' 4& C' 2?' -A5' :2*?5' 46'15 'G'4&(' +*-' 46'6155F4E' 641' '6' -A5' 15&:A' G5-' D4??5??'4&' 46' 4E5(' -A5' '+51-'5?' 46' 2!' -2 C' 2&F' 46'5$51C' ?-2-5' '&' *14D5' 215' '&' D51' K'9

A5' 2-A4 ':' H'&G' $'5@5F' '-' '&' -A'?' 'GA-(' 2&F'?5&-' 15D52-5F' 2&F' 521&5?-' 15E4&?-12&:5?' -4' 4*'?' Z ' 2G2'&?-' A'?' 2GG15??'4&?' 4&' -A5' :A*1:A(' +5?55:A'&G' A'E' &4-' -4' '&-511*D-' -A5' D52:5' 46' A1'?-5&F4E(' 2&F' A'?' 4@&' D'4*?' D*1D4?5(' E415' D21-':* 21 C(' 46' ?D152FB '&G' -A5' +2&&51?' 46' -A5' 14??' 4$51' -A5' '&6'F5 ' 15G'4&?' 46' 61':2 ' A5' $51C' ?@55-' 2&F' 612-51&2 ' -4&5' 46' -A5?5' :4EE*&':2-'4&?' 6' 5F' -A5' T'&G' 46' 12&:5(' ?2C?' *':':'21F'&'(' @'-A' E*:A' F'?-1*?-' 46' A'?' 14C2 ' +14B -A51' 2&F' A5' @2?' '521F' -4' ?2C(' '&' 2 *?'4&' -4' -A5' G152-' D15D212-'4&?' -A5' 2--51' @2?' E2H'&G' +C' ?52' 2&F' 2&F(' R' ' AE' -A5' 212:5&' 2G2'&?-' @A4E' -A5C' 215' F'15:-5F K'6

I' - ' -# ' -'&&&& J'# A' ? / /' $ & ' G?#&?' ? ' * L
+ ' / ' $>$ /' &?$-' J '#' A' # ? /' ? ' - -'# ' $/'$ &'* '
+ ' / ' $ " ' &?$-' JJ'#' ?# ' - - ' - ' /# $-'
A +$ / 9!' '&$-' &&JJ' &?#$' #' ' $+#" ' '###'
' ' /($#$' #0' #J' -' / ' 8 '$' 2)53 .' 6 ' / '
2 @' A' $ 0$!$' ' $ ' ' +' ' +/ $ /' ?$'
$## ' 2@22 A +$ / K' '&$-' ? ' $ & ' G ' -$ ' *' ? '
&&JJ' c ' $ > ' $/ +' -# '#& ' / '* ' ? '*# *' *' $L
$&?#$' #(' * # /' : #' - ' ? ' '$0 ' ', /'
' ' *' ?# ' ' - $D' *' *' $ > ' $' + ' & +- '
? ' $? #& D# '" $ ' ? ' - # &#L $ /' -#&# ' $? # >'
-$'$? ' *' ? ' "' & $ # # ' ? G ' /# $ /(' # & '$' L
$"$# ' $ & '$ /' #& ' = # ' '$' - 'G# ?' #'$

=< ;

4 ?5:*15 51F'&2&F E415 -4 A'? '&-515?-?(-A5 D4D5 G12&-5F A'E -A5 '&$5?-'-*15(?4 4&G @'-AA5 F(46 2D 5?(4& -A5 ?2E5 52?C -51E?' -A2- '- @2?' 641B E51 C A5 F +C -A5 12G4&5?5 '&5 '?' A4 '&5??' 6*1B -A51 15 52?5F A'E 614E -A5 4+ 'G2-'4& 46 A'?' E211'2G5 -152-C(+C @A':A -A5 E4'5-C 46 2D 5?' @2?' -4 15$51- -4 -A5 15&:A :14@&' '& :2?5 46 51E2'&50?' FC'&G @'-A4*- '??*5 A'?' F'?D5&?'&G D4@51 46 -A5 ?*:B :5??41?' 46 - 5-51(?4 :4&$5&'5&- 641 D1'&:5?' '& -A5'1 G44F G12:5?('?' *&F4*+-5F C -A5 ?5$515?- -2J 5$51 5$'5F +C ?*D51?-'-'4& 4& A*E2& 152?4& 9

&' -A5 =-A 46 :-4+51 < <<(2 -152-C @2?' :4&B : *F5F +5-@55&')* '*?' (' 51F'&2&F(2&F 5&':5(@'-A -A5 2$4@5F 4+,5:- 46 D14-5:-'&G -A5 :A*1:A(> ['& 4-A51 @41F?(F1'$'&G -A5 15&:A 4*- 46 -2 C 6

? - ! & .' $ /' $ 0 , '-$ $" ' *' ? ' $+ ' -# ' ? G ' ?#+' ' + &?' # ' $ '# ' ?# ' /# $ #' ' 0 ' - ' ' ? '&?$ " ' *'# # & # >' U' ; ' - ' ' $ $+' ! ' $ #+$+' ' +# #0 ' ' 0# ' #-= +' "# $+' ! ' J +' ' & # #$ # ' + ' 0 # $ ' $, $ ' '$"$ '$- /' " +' +' / ' -$& ' /$ '# ' * , #= ? ' +$ /$ # V' ' $ > ' - ' -# ' 0# - $ A ' ' * ? ' - ' &&&& #' 1' ' $ > ' - ' -# ' - ' &&&&J # A $ #$ $' +' ## #0 ' JJ#J '&$- JJ#' A 'P '# ' :# $ ' ' :# +' - '2B(' < / ' $?' 2@)3 A $ / '$ ' 6# ' / ' $ ' : ' +'#' - '23 ? ' $& ' *' # ' # ' G$ ' /$ /' P >' 4' 2@2E' ' ?

* G# "' " ' ?' - #*' +# /' ?' * /$' '#& ' * ' ?' $ $' #0 ' *' $' G?# ' -$ * >' $ /' ?' $#/' *' 4EE' $ & 'G? ' ?' $ ' *' ?' &? &?' ? /'0'# '$/ /' 9 =' # $' +' '#' #0' #J' &$-' J# .' ?' - -' ?$/'?# ? ' * /' ?' # ' # ' J& -' ' ?' + ' J 0# $ ' + < G?#&?' ' + &?' /# " /' /# $ /' ?$' ?' -$ /' 0>' #$' ' ?#' ' * +' $- ' G# ? ' & / & /# "' ' + ' ?#' ?' #L ' G? ' G$' G$# # "' ? '* ' $' - $' # '# G' G# ?' ?#+' ' $ > ' -' &&& ### A 8 #&L &#$ /# #' + '#' ' - ')4 X' 8 #&&#$ /# #' + ' ' #0' J' - 'FE) A $ #$ $' + ' ##' #0' HHH' &': A' >+ (' / $' + 'J###' - - ' 4E@ A 4E3

14 E -A5 D'4*? D*1D4?5 -4 @A':A '- @2? F5$4-5F('- @2? :2 5F -A5 4 C 52G*5 A5 M*4-2 -4 +5 6*1B &'?A5F +C -A5 T'&G 46 12G4& @2? <; A52$C(< 'GA- :2$2 1C(< (644-(2&F 2 ?M*2F14& 46 5 5$5& G2 5C?(-4 2:- '& :4&:51- @'-A -A5 5&5-'2& 6 55- A5 :4E+'&5F 641:5? @515 -4 +5 D 2:5F *&F51 -A5 :4E E2&F 46 *G4 F5 21F4&2($':514C 46 2B D 5?(2 D51?4& 46 D4 '?A5F 2&F 5&G2G'&G 2FF15??(+*- @'-A4*- -A5 15?4 *-'4& 41 5JD51'5&:5 15M*'?'-5 -4 E' '-21C ?*::5?? A5 14*GA 4 F D4D5 ?21:2?-':2 C &':H&2E5F A'E R 2FC 21F4&2K -@2? 2& 2DB D4'&-E5&- -A2- @4* F :51-2'& C A2$5 &5$51 +55& E2F5 +C b*55& ?2+5 2 &F55F(-A5 62$4*1 ?A4@& -A'? &4+ 5E2& 4& -A'? 2&F 4-A51 4::2?'4&? @2? ?4 E*:A +5C4&F A'? F5?51-?(2? -4 12'?5 2 ?*?D':'4& '&9 E2&C(-A2- A5 @2? E415 &521 C 2 '5F +C + 44F -4 51F'&2&F -A2& *?*2 C 'E2G'&5F 9

21 C '& < <;(12&:5(+C G152- 5J51-'4&? 2&F @'-A4*- 2 ?'&G 5 :4&65F512-5 4*- 46 -2 C(?2$5 -A5 62 ?5 2&F 6 *:-*2-'&G 5ED5141(G4- 2& 21EC '&-4 -A5 6'5 F ?*D51'41 -4 -A2- 46 -A5 2 '5? '& D4'&- 46 &*E.

1 8 #&&#$ /# # #$ + + # /#& &? (() ; & ' #0 - FE3 A +0 Q ' ((S 9 ' H - /# $= : # #K + ## #0 J## A $ #L &?#$' # /# 2B $""# $ $ + ## #0 JJJ &$- ' J#' A $ > - -# 2@2(- &&&& JJJ### && /# "= ? : # # + "$' & L D# "G /?$' $-- # /' $L / & ? $+ "" # ' $?- *& ++$ / = ! -$" $?$ +- $+$ $ $# # =&?# *' ?$/ ?# G 0## ?' , : #& - /# , $#*# /' ?#+ * # # ? &? $00#$ *$?$ "$ #= > *' ? $ # $ / "$ +$ -# - *$ -# $'$ $ + ' #0 JJJ' & " $ / # - -0 $ & + J##

=<= 7 ' ' ' '

+51?(2&F' ?-' ' E415' ?4' '&' -A5' :A212:-51' 46' '-?' :4EB E2&F51' A'?' @2?' 2?-4&' F5' 4'J(' *H5' F5' 5B E4*1?(2&F' +14-A51' 46'-A5' b*55&' 46' 12G4&' A4*GA' 2' +4C' '&' C521?(641' A5' @2?' +*-' -@5&-C.-@4(A5' @2?' 1'D5' '&' *&F51?-2&F'&G(2&F' D4??5??5F' :4&?*EE2-5' E''-21C' -2 5&-?' 5' '&-14F*:5F' 2' ?5$5151' F'?:'D '&5' '&-4' A'?' 21EC(2&F' 2&' 5&-'15 C' &5@' ?C?-5E' 46'-2:-':?' 5' 44H5F' 641@21F' -4' A'?' 15?* -?' @'-A' ?-51&' '&F'6651B 5&:5'-4'-A5' E52&?' +C' @A':A' -A5C' @515' -4' +5' 5665:-B 5F' 5' F'?15G21F5F' -A5' F'66':*-'5?' 46' -A5' 142F?(2&F' -A5' '&: 5E5&:C' 46'-A5' ?52?4&(@A':A' A2F' A'-A51B -4' D*-' 2' :A5:H' 4&' E''-21C' 4D512-'4&?' A14*GA' -A5' E'F?-' 46' 61'GA-6*' E412??5?(41' '&' -A5' F5D-A' 46' @'&-51' ?&4@?(A5' D51641E5F' A'?' E21:A5?' @'-A' 2' :5 5B +1'-C' *&H&4@&' '&' -A5' @216215' 46' -A2-' 2G5' 6-51' 52$'&G' '2&('&' 5??' -A2&' 2' 641-&'GA-' A5' 15 '5$5F' 4 4G&2(-A5&' +5?'5G5F' +C' -A5' 2 '5?(5+' -A(E2F5' 2' :4*&-51E21:A' 4&' 15?:'2(F5652-5F' 2' F5-2:AE5&-' +C' -A5' @2C(2&F' -A5' @A4 5' 5&5-'2&' 21EC' *&F51' '-?' @2 ?(2&F' 4&' -A5' ?2E5' F2C' 46'-A5' 2--51' 5$5&-' ?*:B :55F5F' '&' :211C'&G' -A5' D 2:5' +C' ?-41E' 6-51' 2' 65@' @55H?(F'??'D2-'4&' 46'-A5' :21&'$2 (A5' 2G2'&' D*-' A'EB ?5 6''&' E4-'4&(2&F' F5?:5&F'&G' 4&' 2$5&&2' ?*::55F5F' '&' +1'&G'&G' -A5' 2 '5F' 21EC' -4' 2' F5:'?'$5' 2:-'4&' *&F51' '-?' @2 ?' 51F'&2&F(@5 ' *&F51?-2&F'&G' -A5' D5:*B '21' :A212:-51?' 46' -A5' 15&:A' 2&F' D2&'?A' ?4 F'51(A2F' :2*-'4&5F' A'?' G5&512' -4' 2F4D-' -A5' 2+'2&' D4 ':C' 46' 4&?2 $4(2&F' 2$4'F' 2' :4?5' 5&:4*&-51' 2?' 4&G' 2?' D4??'+ 5 9

I' +$ / K' ' &$-' &&JJJ' &&JJJ# A 8 #&&#$ /# #' 2 ' /($

=<

D1' <<-A(< <; A'?' +2-- 5(64*GA-' @'-A' -A5' G152-5?-'&* E+51?(@2?' 2 ?4' -A5' E4?-' E*1F514*?' @A':A' A2F' ?-2'&5F' -A5' 62'1' ?4' ' 46' -2 C' 641' 2' :5&-*1C' 4' 5??' -A2&' 5'GA-55&' 41'-@5&-C' -A4*?2&F(2::41F'&G' -4' 2*-A5&-':' 2::4*&-?(65 '&' '-(:4 E D15A5&F'&G' -A5' +5?-' + 44F' 46' 12&:5' 2&F' -2 C 9' A5' $':514C' 21F4&2' @5&-' 466'?4 E 5@A2-' -44' 521 C' 641' A'?' 15D*-2-'4&' ℕ +*-' -A5' D2&'?A' '&62&-1C' *&F51'-A5' 4*&-' 5F14' 2$2114' +5A2$5F' '&' 2'?-C 5'@41-AC' 46' -A5'?:A44' 46' 4&?2 $4' *1'&G' -A5' 521 C' D21-' 46' -A5' F2C' -A5C' 2C' 4&' -A5' G14*&F('&' 2' D4?'-'4&' @A':A' ?A5 -515F' -A5 E' 614 E' -A5' F52F C' 21-' 51C' 46' ?-5(-A5&' -A5' +5?-' E4*&-5F' 2&F' +5?-' ?51$5F' 46' 2&C' '&' *14D5' A5&' 2-' 5&G-A(2?' -A5' -'F5' 46'+2-- 5' @2?' G4'&G' 2G2'&?-' -A5 E(-A5C' @515' +14*GA-' '&-4' -A5' 6'5 F(2$2114' 5F' -A5 E' 2-' 4&:5' 2G2'&?-' 2' F55D' :4 * E&' 46' 2&F?H&5:A-?(@A4(21E5F' @'-A' -A5' 4&G' 51E2&' D'H5(@515' +521'&G' F4@&' 2' +56415' -A5 E' A5' D2&'21F?' 15:5'$5F' -A5'?A4:H' 46' -A'?' 641 E'F2+ 5' @52D4&' 4&' -A5' E2' 5F' D2&4D C' @'-A' @A':A' -A5'1' +4F'5?' @515' :4$515F(2&F(F5J-514*? C' G 'F'&G' '&-4' -A5' A4?-' 5' 12&H?(:4&-1'$5F' @'-A' -A5'1' ?A41-' ?@41F?' -4' F4' ?*:A' 5J5:*-'4&' 4&' -A5' 5&5 E C

+' #0' H' --' FBE A F)F' - .'- /#& ' ?' " # ' *' ?' c ' P '# ' :# $' #' H' ? ' *' #0' ##' --')' 43' A' M+' / ' R' $ '# / # '*# ' ? ' ' $>$ /' &?$-' J '###' A' $#$ -$ /$ +' /' $ " ' &?$-' JJ'# ' $ " ' +$ '- ' $' A 1JJ'### $' &$+-$" $< ?" $' -- # '#' - - ']' # ' # / & ' ?' ' $' +$ & 0 />' ' *' $' $' $+ "' / & ' -$ ' 8 & ' ?' '# # ' *' # $<' # ' G?#&?' $ ' ' $ & ∨ ?' & >'- -? ' ' $? $ /' # ' $ '###' '@@

=< ‘ ‘ ‘ ‘ (

&D14-5:-5F‘ 5J:5D-‘ +C‘ :41? 5-?‘ ‘&‘ 614&-(‘ 2&F‘ ‘&:2B D2+ 5‘ 46‘ 2$2‘ ‘&G‘ -A5E?5 $5?‘ 46‘ -A5‘1‘ 4&G‘ @52D4&(‘ -A2-‘ -A5C‘ @515‘ -A14@&‘ ‘&-4‘ :4&6?‘4&(‘ 2&F‘ -4-2 C‘ F‘?:4E6‘-5F‘ -‘ @2?‘ 15D52-‘&G‘ -A5‘ 5JD51‘E5&-‘ E4159‘ -A2&‘ 4&:5‘ E2F5‘ F*1‘&G‘ -A5?5‘ @21?(‘ +*-‘ &5$51‘ 4&‘ ?4‘ G152-‘ 2‘ ?:2 5(‘ 2&F‘ ‘-‘ 6* C‘ 5?-2+ ‘?A5F‘ -A5‘ ?*D51‘41‘-C‘ 46‘-A5‘ D2&‘?A‘ 21E?9

A5‘ -2 ‘2&‘ ‘&62&-1C(‘ @A‘:A‘ A2F‘62 5&‘ +2:H‘ +56415‘ -A5‘ 2&F?H&5:A-?(‘ &4@‘ 12 ‘5F‘ *&F51‘ :4$51‘ 46‘ -A5‘ D2&‘?A‘ :A21G5M‘ *&-‘‘ 2-‘ 5&G-A‘ -A5‘ 4$51@A5 E‘&G‘ : 4*F?‘ 46‘ 15&:A‘ G5&F21E51‘5(‘ A52F5F‘ +C‘ $5?‘ F0 .‘ UG15(‘ @A4‘ 4?-‘A‘?‘ 4@&‘ ‘65‘ ‘&‘ -A5‘ :4ED5 5F -A5‘2 ‘5?‘ -4‘ G‘$5‘G14*&F‘ A5‘15-152-‘46‘ -A5‘ D2&B ‘21F?(‘ A4@5$51(‘ @2?‘ :4&F*:-5F‘ @‘-A‘2FE‘12+ 5‘41F51(‘ 2&F‘ -A5C‘ D15?51$5F‘ -A5‘1‘12&H?‘ *&+14H5&(‘ 2?‘ -A5C‘ 15B D52-5F C‘ -*1&5F‘ -4‘ F1‘$5‘ +2:H‘ -A5‘ -‘F5‘ 46‘ D*1?*‘-‘ -‘ -A‘?‘ :1‘?‘?(‘ 2?-4&‘ F5‘ 4‘J(‘6 *?A5F‘ @‘-A‘ ?*:5??(‘ @2?‘ ?4‘5J2?D512-5F‘ +C‘ -A5‘ ?‘GA-‘ 46‘-A‘?‘ $2 ‘2&-‘ :41D?‘ G4‘&G‘ 466‘ ‘&‘ ?4‘ :44‘ 2&F‘ 41F51 C‘ 2‘ E2&&51‘ 614E‘ -A5‘ 6‘5 F(‘ -A2-‘ A5‘ E2F5‘ 2‘ F5?D512-5‘ :A21G5‘ 2-‘ -A5‘ A52F‘ 46‘ A‘?‘ :A‘$2 1C(‘ ‘&‘ A4D5?‘ 46‘ +152H‘&G‘ ‘-‘ ! &641-*B &2-5 C(‘ A‘?‘ @4*&F5F‘ A41?5‘ 65 ‘ *&F51‘ A‘E‘ -‘ @2?‘ ‘&‘ $2‘&‘ A‘?‘ 64 4@51?‘ :2 5F‘ 4*-(‘ R -‘ ‘?‘ 4*1‘ $‘:514C

9‘ 12&-6‘E5(‘5? F5? 4E.‘ E5? *?-‘ ‘?:‘$‘‘ >‘ *‘::‘21B F‘&‘(‘-4E‘:‘ ‘+‘H‘ DD‘; ‘ >‘ ‘ >‘ 5E2F5L(‘ :2D‘ ::JJJ‘‘::JJJ‘‘‘‘ >‘ 5E‘F5 2B C21F(‘:A2D‘ ‘$ > E‘F5 5.‘ 2C(‘-4E‘ J$‘‘‘ D‘; =‘ >‘ 5E‘ F5 5*12&G5(‘:A2D‘ JJ‘J‘ JJJ‘ >‘ 5E+4(‘ ?-41(‘&‘L(‘-4E‘‘‘‘ ‘+‘ J‘‘

2:A‘2$5 ‘F45?,*?-‘:5-4-A5 G2 2&-1C‘ 46‘-A‘? $2‘2&-‘ :41D?(@A4?5:4&F*:-‘ 4& -‘‘?.4::2?‘4& 6*1&‘?A5? A‘E‘ @‘-A‘2 D51-‘&5&-‘ ‘ *?-12-‘4&(‘& 5?-‘E2-‘&G -A5 :4ED212-‘$5 $2 *5 46‘-A5 D2B &‘?A(‘41‘12-A51 4E2& 21E?(‘2&F -A5 51E2&‘ D515(‘-4E‘ ‘$‘ 5 0 1-5 F5 2 *5112(‘ ‘+‘ ‘‘‘ D‘ # 5F‘ 5&4$2(‘< S

-A5 +14-A51 46 C4*1 M*55&PK A5 @41F? A2F &4 :A21E 641 2 D2&'?A 521(2&F A5 @2? F5?D2-:A5F @'-A 2 E * -'-*F5 46 @4*&F? 5 15:5'$5F 64*1-55& 41 6'6-55& '& -A5 62:5N G44F D1446(?2C? -A5 * (? +) & R -A2- -A5 G5&- 5 D1'&:5 A2F &5$51 -*1&5F A'? +2:H K9

A515 215 65@ '&?-2&:5? '& A'?-41C('6''&F55F -A515 +5 2&C(46 ?4 +1'56(2&F 2- -A5 ?2E5 -'E5 ?4 +1' '2&- 2 E' '-21C :21551(2? -A2- 46 2?-4& F5 4'JN 2&F '- @5 5&-'-5F A'E -4 -A5 5D'-A5- A'? :4*&-1CE5& G2$5 A'E(46 -A5 R A*&F51+4 - 46 -2 CK6 5 A2F &4- E515 C G'$5& 5J-1241F'&21C D14E'?5(+*- '& -A5 :4*1?5 46 2 $51C 65@ E4&-A? A2F 2:A'5$5F ?*:A 15?*-? 2? E'GA- @5 E2H5 -A5 G152-5?- D4@51? 46 -A5 5&'&B ?* 2 -15E+5 641 -A5'1 D4??5??'4&? '? D15:4:'4*? E' '-21C -2 5&-?(-A5 521 C 2G5 2- @A':A A5 2??*E5F -A5 :4EE2&F 46 21E'5?(2? @5 2? E2&C D5:* '21'B -'5? 46 ?# / # &#- # 2&F $& #& ?*GG5?- ?4E5 15B ?5E+2&:5 -4 -A5 +5G'&&'&G 46 2D4 54&0? :21551

! &A2DD' C(A'? +1' '2&- 62E5 '? ?* '5F +C 2 15:HB 5??&5?? 46 A*E2& '65(-A5 E415 4F'4*? '& 4&5 -44

9 5E F* A5$ 2C2JF(:A2D '$ > *'::'21F'&'(-4E '$ '+ H DD > > 5- 21-C1(5D ::::: JJJ''' > 12&. -4E5(4EE5? *?-15?(F'?:(JJ'$

A5 +5?-(-A2- '?(-A5 E4?- D51?D':*4*? 2&F 2&'E2-5F F5B ?:1'D-'4& 46 -A5 6'GA- 46 2$5&B &2(2E4&G :4&-5ED4121C @1'-B 51?(@' +5 64*&F '& *'::'21B F'&'(/4:'-7N 2E4&G -A5 E4. F5E('& '?E4&F'(/ 5D -2 -4E J'$:A2D(:'J7 2& 2*-A41 @A4 A2? -A5 1215 E51'- 46 :4EB +'&'&G D1464*&F DA' 4?4DA':2 2&2 C?'? @'-A -A5 ?*D516':2 2&F D':-*15?M*5 G12:5? 46 &21B 12-'$5

- R 5 64*F15 F5 -2 '5 / 2' 21F(-4E '$' D <7 > 'GA- 2*-A41'-C(2:H&4@5FG5(5$5& 641 2 (

=<S

C4*&G -4 +5 ?-55 5F +C 62E''21'-C @'-A -A5 '14& -12F5 -4 @A':A A5 @2? F5$4-5F - E2C +5 62'1(A4@5$51(-4 :A21G5 -A'?4& -A5 2G5 12-A51 -A2& 4& -A5 '&F'$'F*2 (641 ?*15 C &5$51 @2? -A515 4&5 :A2B 12:-51'L5F +C G152-51 +1*-2 '-C 2&F E415 *&?D21'&G 6514:'-C '& '-? @21? 9 4 '-- 5 A2F -A5 D14G15??46 :'$' 'L2-'4& F4&5 641 A*E2&'-C - '?&4-*&-' 2 15.(:5&- D51'4F(-A2- 2 E415 G5&514*? ?D'1'- A2? 4D512-B 5F -A2- 2 65 4@ :152-*15 A2? +55& *&F51?-44F &4- -4 64165'- A'? 1'GA-? 2? 2 E2&(+5:2*?5 A5 '? 2& 5&5EC -A2-:4&$5&-'4&2 2@? A2$5 +55& 5?-2+ '?A5F(-5&F'&G G152- C -4 E'-'G2-5 -A5 5$' ? 46 2 :4&F'-'4& @A':A(@'-A 5$51C 2 5$'2-'4&('? 4&5 46*&?D52H2+ 5 E'?51C 2&F -A2- -A4?5 @A4 A4 F -A5 F5?-'&'5? 46 &2-'4&? '& -A5'1 A2&F? A2$5 +55& E2F5 -4 655 (-A2- -A515 '? 5?? -1*5 G 41C(2&F 621 5??D146'-(-4 +5 F51'$5F 614E @21(-A2& 614E -A5 @'?5 D15$5&-'4& 46'-

A5 F5652- 2- 2$5&&2 ?-1*:H 2 D2&':'&-4 -A5 :4&65F512-5? A5 ?-4*- A521- 46)*'*? 62 -51.

9 &5 5J2ED5 E2C ?*66':5(4::*11'&G '& -A5 @21 46 -A5 52G*5('&<< A5&' :5&B L2 @2? -2H5& +C -A5 ED51'2B '?-?(2 &*E+51 46 -A5 '&A2+'-B 2&-?(2E4*&-'&G -4 4&5(41(2:B :41F&G -4 ?4E5 2::4*&-?(?'J -A4*?2&F(-44H 156*G5 '& 2 "&5'GA+4*1'&G G14--4(@'-A -A5'1 @'$5? 2&F :A' F15&(:4ED15B A5&F'&G E2&C 46 -A5 D1'&:'D2 62E''5? 46 -A5 D2:5 15&:A 466':51(F5-5:-'&G -A5'1 15-152-(:2*?5F 2 A52D 46 62GG4-? -4 +5 D'5F *D 2 -A5 E4*-A 46 -A5 :2$51& 2&F ?5 4& 6'15 *- 46 -A5 @A45 &*E+51 466*U-'$5? 4& C 4&5 5?:2D5F@'-A '65N 2&F -A5 +2:H5&5F 2&F :4&$* ?5F 2D8 D5212&:5 46 -A5 +4F'5? ?A4@5F -44 D2'& C -A5 :1*5 2G4&'5? 46 ?*664:2-'4& / 5E F5 2C21F(:A2D J > 5E+4(?-41 ':&'L -4E ''' '+ J7 2C21F 5J5:*-5F -@4 46 -A5 2*-A41? 46 -A'?='2+4':2 2:- 4& -A5 ?D4- *- -A5 R :A5$2'51 ?2&? 15: D14:A5K @2? 2& 5J:5D-'4& -4(12-A51 -A2& 2& 5J2ED5 46(-A5 D15$2 5&- ?D'1'- 46-A5 2G5

5F(' 2&F' '-' 15M*'15F' 2 ' -A5' 2??*12&:5?' 46'-A5' D2&'?A' 2&F' 5&5-'2&' E'&'?-51?' -4' H55D' A'E' ?-2*&:A' -4' A'?' D*1D4?5' T'&G' 51F'&2&F' '??*5F' 41F51?' -4' -A5' 152-' 2D-2'&' -4' A4 F' A'E?5 6' '&' 152F'&5??' 641' -2H'&G' -A5' :4 E E 2&F' 46' 641:5?' -4' +5' '&?-2&- C' 12'?5F' 641' 2D 5?' A515' :4* F' +5' &4' +5--51' D144 6' 46'-A5' 14C2' :4&?-51B &2-'4& 9

A5' $':-41C' 46' 2$5&&2(' A4@5$51(' @2?' E415' 62-2' -4' -A5' 15&:A' -A2&' -4' -A5'1' 645?' A5' *&'&-511*D-B 5F' ?*::5??5?' 46' 2' :4 E E 2&F51' 215' ?4' 621' *&641-*&2-5(' -A2-' -A5C' '&: '&5' A'?' 64 4@51?(' +C' -A5' +1' '2&-' ' *B ?'4&' -A5C' -A14@' 214*&F' A'?' &2 E 5(' -4' 15 C' 5??' 4&' -A5'1' 4@&' 15?4*1:5?' -A2&' 4&' A'E' @A4 E' -A5C' A2$5' A'-A51B -4' 64*&F' '&$'&:'+ 5\' 2&F' -A*?' ?*+,5:-' -A5'1' 4@&' F5?B -'&C' -4' 2' -A5' :2?*2 -'5?' @A':A' 2--2:A' -4' -A5' 641-*&5?' 46' 2' ?'&G 5' '&F'$'F*2' A5' F52-A' 46' 2?-4&' F5' 4'J' ?55 E 5F' -4' F'??4 $5' -A5' 4& C' +4&F' @A':A' A5 F' -A5' 15&:A' -4G5-A51' A5' 466':51?' +5:2 E 5' F'$'F5F(' -A5' ?4 F'51?' F'?A521-5&5F(' 2&F' @'-A' -A5' 4??' 46' -A5'1 C4*&G' A514' 4?-' 2' '&-515?-' '&' -A5' ?51$':5' (A5' 2 '5?(' 2F$'?5F' 46' -A'?' F'?41F51 C' ?-2-5' 46' -A5' 21 E C(' 15:4$515F' :4&6'F5&:5' 2&F' 15&5@5F' -A5'1' 5J51-'4&?' A14*GA' 51F'&2&F0?' '&6 *5&:5' 4$51' A'?' ?4&.'&. 2@(' 5&1C' -A5' 'GA-A' 46' &G 2&F(' -A5' 2--51' A2F' +55&' '&F*:5F' 4D5& C' -4' ,4'&' -A5' 52G*5' '&' -A5' +5G'&&'&G

I' 8 #&&#$ /# #' +' ' ' #0' J' DD' <' >' <;' ;;(;' >' ? #&$' / ' 8 $' $-' #0' ### &$-' '#' A' $ #$ $' 6# ' /' -' +' ## #0' JJJ' &' #J' A

')4$'*?(' '-2 4&?2 $'(' '+' ''' D' ;SS > 21+2,2 (&2 5?(' 2A4 < <;' 55 2?4 5--(F' 5--41'(2GG'4 < (< <=(2D' D515 F' 2:A'2$5 '

□' □

= ;

46 -A5 D15?5&- C521 9 A5 2-A4 ':'H'&G A2F -A5 2FF15??(E4154$51(,A?- +56415 -A5 +2-- 5(-4 F5-2:A -A5 5ED5141 614E 12&:5(+C 5665:-'&G 2 -1*:5.+5B -@55& A'E 2&F 5&':5 "P" A5 15&:A(&4@ E5B &2:5F 2&F D15??5F 4& 5$51C ?'F5(+5G2& -A5'1 15B -152- *&F51 -A5 +12$5 2 2 ':5N 2&F -4 ?*:A 2& 'ED4-5&- ?-2-5 @515 -A5C 15F*:5F(-A2- '& 5?? -A2& -A155 E4&-A? 26-51 -A5 62-2 $':-41C( )*&5 ;S-A(-A5C @515 2- -A5 644- 46 -A5 D?(A2$'&G 2+2&F4&5F &4- 4& C -A5'1 15:5&-(+*- 2 -A5'1 :4&M*5?-? '& -A5 &41-A 46 -2 C %\N

A5 ?2E5 15?*-? &4@ -44H D2:5 2? '& -A5 2-5 @21 2G2'&?- 5&':5 A5 :4&65F512-5? M*2115 5F 4$51 -A5 F'$'?'4& 46 -A5 ?D4' A5 15D*+ ':(@'-A -A5 21G5?- :2'E?(4+-2'&5F -A5 52?- :4&:5??'4&?' A5 65 - -A2- ?A5 @2? -4 +5 E2F5 -4 F5?:5&F -4 2& '&B 651'41 12&H '& -A5 ?:2 5 46 &2-'4&?' 51F'&2&F 521&B 5?- C 15E4&?-12-5F @'-A -A5 D4D58 2&F ?*+?5M*5&- C(+C E52&? 46 A'? 5&5-'2& E'&'?-51(@'-A 2J'E' '2&(4& -A'? E'?-2H5& D4 ':C U *- -A5 '&F'66515&:5 46

g *E4&-(41D? 'D4E2-(-4E '$ D <

5 A2F +5:4E5 2 D21-C -4 '- 2? 521C 2? 4$ < -A(46 -A5 D15:5F'&GC521N A5 F5515F '-? D*+':2-'4&(A4@5$51(*&-' A5 A2F 15:5'$5F -A5 2?- '&?-2B E5&- 46 2 ?*+?'FC -A2- 4*'? Z @2? -4 D2C A'E 641 -A5 E2'&-5&2&:5 46 D52:5 / CE51(45F512(-4E J''' DD << > ; > '?E4&F'('?-(F5? 12&' 2'?(-4E J$ D S 7 $5& -A5 :A'$2 14*? 211C -A5 'GA-A :4*F &4- 5?:2D5 -A5 -1':F?A ?D'1'- 46 -A5 2G5

c *':':'21F'&'(-4E $ '+ J - 4FE

) 5E F* A5$ 2C21F(:A2D $ > 5E F5 5*12&G5(:A2D(JJJ' > 5115122(-4E $''' DD S (S<' > 0 *':':'21F'&'(-4E : '+ H DD (> V*&-2(-4E $'' '+ J' :2D JJ g V*1'-2(-4E $'' '+ J' :2D J '$' > J $''' > *':':'2'F'&'(-4E $'' '+ J'' D3 ;

21-C1 15D41-? 2 :4&$51?2-'4&

-A5 4&5(2&F -A5 :*D'F'-C 46 -A5 4-A51(.@515 : 4?5F 2G2'&?- 21G*E5&- A5 15?* -@2? D15:'?5 C @A2- -A5 D1*F5&- E4&21:A 6415?2@ U 5&':5 @2? F1'$5& '&-4 -A5 21E? 46 A51 D516'F'4*? 2&:'5&- 2 C(2&F 4& 21:A ; 1F(< < (2 F56'&'-'$5 -152-C @2? 2112&G5F @'-A 12&:5 641 -A5'1 E*-*2 F565&:5 U A*? -A5 E4?- 56 :'5&- E5E+51 @2? 2 '5&2-5F 614E -A5 :4&65B F512:C -A5 15:5&- 2F$2&-2G5? 46 -A5 2 '5? @515 :4ED14E'?5F 5@ :4E+'&2-'4&? @515 -4 +5 641EB 5F(2&F &5@ 2&F '&-51E'&2+ 5 D14?D5:-? 46 A4?-'B '-C 4D5&5F

51F'&2&F(15 '5$5F 614E ' E E5F'2-5 2DD15A5&?'4&? 46 -A5 15&:A(-44H :4ED212-'$5 C '-- 5 '&-515?- '& -2 '2& D4 '-':? 5 @2? -44 E*:A 4::*D'5F @'-A ?5-- '&G A'? :4&M*5?-? '& 2$2115 A5 21EC('&B F55F(*&F51 21F4&2(?-' H5D- -A5 6'5 F '& -A5 &41-A 46 -2 C A5 $':514C(26-51 155?-2+ '?A'&G -A5 5B F':' '& 415&:5(15E2'&5F '&2:-'$5 A5 15&:A('& -A5 E52& @A' 5(A2F 2G2'& E*?-515F '& 641:5(2&F :14??'&G -A5 E4*&-2'&? 5&:4*&-515F -A5 @'??' '& 2 + 44FC +2-- 5 2- 4$212( )*& 5 -A(< < (@A515 -A5 641E51 @515 5&-'15 C 14*-5F 21F4&2(-A5& 14*?'&G 614E A'? 5-A21GC(-12$51?5F -A5 ' 2&5?5 @'-A4*- 4DD4?'-'4&(2C'&G @2?-5 -A5 2&:'5&- -511'-41'5? 46 5&':5(+*1&'&G -A5 D2 2:5? 2&F D 52?*15.A4*?5? 46 '-? 41F C '&A2+'-2&-? 4& -A5 +52*-'6* +2&H? 46 -A5 15&-2(2&F 2DD142:A'&G ?4 &521 -4 -A5 R b*55& 46

?$? ?$/ =G# ? ? : #$ I + - #- +$L +# # '# -$# &?# "" ## #, + '#' -$ '# '3B 0 # - -# '&- JJ

= ; ;

F1'2-':(K 2? -4 -A14@ 2 65@ 'ED4-5&- +2 ? '&-4 -A5 -A5 E4&2?-51C 46 2& 5:4&F4

A5 '&F'G&2-'4& 46 -A5 5&5-'2&? 2&F 46 $'2&4("-A5 ?2E5 G5&512 @A4 A2F 64*GA- ?4 G2 2&- C *&F51 4&?2 $4 2- -A5 21'G '2&4(:- -A(A*11'5F -A5E '&-4 2& 5&G2G5E5&- @'-A -A5 2 '5? &521 2 4--2(2- -@4 E ' 5? F'?-2&:5 614E ':5&L2 21F4&2(42F5F @'-A+44-C 2&F 5&-2&G 5F 2E4&G -A5 E4*&-2'& D2??5?(@2? 2??2' 5F *&F51 5$51C F'?2F$2&-2G5 A5 51E2& 2 '5? G2$5 @2C +5 6415 -A5 'ED5-*4*? :A21G5 46 $'2& &4 + *- -A5 D2&'?A '&62&-1C ?-44F '-? G14*&F *&?A2& H5&(2&F +C 5J-1241F'&21C F'?:'D '&5 2&F $2 4*1 ?*:& :55F5F '& -*1&'&G -A5 641-*&5? 46 -A5 F2C 415 -A2& = 46 -A5 5&5EC @515 56- 4& -A5 6'5 F 2&F 2 21G5 &*E+51 46 D1'?4&51?('&: *F'&G E2&C 46 12&H(@'-A 2' -A5 +2GG2G5 2&F 21-' 51C(65 '&-4 -A5 A2&F? 46 -A5 $':-41? 9

A*? 5&F5F -A5 :2ED2'G& 46 < < -A5 15&:A F1'$5& 2G2'& +5C4&F -A5 E4*&-2'&? 5&':5 :44D5F *D @'-A'& A51 ?52.G'1- 62?-&5??5?(2&F :4ED5 5F -4 5&& 14 A51 21-'?2&? 2&F :4'DE4& 2+4*151? '& A51 F565&:5(

g *':':'21F'&'(-4E $' '+ J' DD > < S > 5-51 21& -C1(D*? D'2- 5D &JJ''' > 21'2&2(-4E '' '+ JJJ :2D JJ'ddl 5E4'15? F5 5*12&G5(:A2D(JJJ$'' JJJ$'' > ?4 2& 41'G'&2' 5--51 46 T'&G 51F'&2&F -4 1:A+'?A4D 5L2(2D 5E2 F5L(:2D ::J ''

$'2&4 F'5F 2 '-- 5 E415 -A2& 2 C521 26-51 -A'? F565 2-(2 ?'J-C C521? 46 2G5 5 @2? ?4 E*:A +5 4$5F +C -A5 ?4 F'51C(-A2- -A5C 156*?5F -4 +5 ?5D212-5F 614E A'? 15E2'&?(@A':A @515 +41&5 2- -A5 A52F 46 -A5 21EC 641 ?4E5 @55H? 26-51 A'? F52-A A5C @515 6'&2 C 2'F '& -A5 :A*1:A 46 - -5DA5&'& 5&':5 2&F -A5 ?5&2-5(@'-A E415 G12 -'-*F5I-A2& '? *?*2 C :4&:5F5F -4 15D*+':?(?5-- 5F 2& A4&4*1 2+5 D5&?'4& 4& A'? 62E' C

> + * -' ?- ' ' ?-14&G' '&' 15?4 * 1 : 5?(' 2+4$5' 2 (' '&' -A5' D2-1'B
4-'?E' 2&F' *&: 4&M*512+ 5' ?D'1'-' 46' A51' D54D 5 9

' U' 2E('?-(F5 5&'?5(-4E' -2&G 5F -A5 -41-*4*? D4 '-' :? 46
''' DD' < (< ' ℕ ;&F 5F'- -A5 15D*+ ' :ℕ '& -A5 2: *-5 2&F
' 4*&' 21* A2? ?*DD 'F -A5 2 @2C? ?5&?'+ 5 156 5: -'4&? @'-A
F5?'F512-*E ?4 4&G ?-2&F'&G(46 @A' :A A5 : 4-A5? -A5 F1C ?H5 5B
26* (2*-A5&-' ' A'?-41C 46 2 ?-2-5 -4& 46 62 : -# 2&F '& -A5 &4$5'
@A4?5 '&?-'-*-'4&? @515 -A5 2FB ?-4155? 46 '&641 E2-'4& A5 A2?
E'12-'4& 46 521 '51 -' E5?(2&F 4D5&5F A5 6415'G& D4 ' :C 46
@A4?5 4&G ?-2+' '-C 2&F ?*: :5?? 5&' :5 5J : '-5F -44 E*: A '&-5B
E2H5 -A5 E F5?51$5F C 2& 4+,5: ' 15?' 2E4&G 61'5&F? 2&F 5&5E'5?
46 : *1'4?'-C 2&F '&-515?' -4 4*1 '& -A5 F2C 46 A51 G 41C(&4-' -4
4@&U A5 ?-C 5 46 -A5 @41H(2' 4: : *DC -A5 D5&? 46 -A5 E4?' '&B
4&:5 '$5 C 2&F :4&F5&?5F('? -5 'G5&-' @1'-51?' *-' &4 -2 '2&
&4' -A2' +5?' ?*'-5F -4 A'?-41' ' :A14&' : 51(&4-' 5$5& 4&5 '&-E?-'.
@1'-'&G(+5'&G 46 -A5 D'M*2&-(5F @'-A -A5 466' :5 +C -A5 G4$51&B
5D'G12E E2-' ' H'&F E*: A 2665: -B E5&-' '-?5 6(A2? +55& 2+ 5 -4 5JB
5F +C 15&: A @1'-51?' A5 ?*+B A'+' ' -A5 '&-51'41 @41H'&G? 46 -A5
,5: -(-44(46 -A5 15$4 *-'4&? 46 : 4ED ' : 2-5F E2: A'&51C ?4 ?2-'?B
5ED'15(F45? &4' 2664 1F 144E 641 62: -41' C 2? 4&? 2EA2? F4&5(
-A5 F12E2-' ' '&-515?' 2--2: A'&G @'-A -A5 2'F 46 -A4?5 $4 * E'&B
-4 @41H? @A' : A 2F E' ' 46 E415 4*? ?-2-5 D2D51?(@A' : A @515 2?
5J-5&F5F +'4G12DA' : 2' F5$5 4D5' ,52 4*? C G*21F5F 614E' '&?D5:B
E5&-' +*&F2&-' '&-515?' @' ' -'4&(*&-! -A5 F4@&62 ' 46 -A5
+5 64*&F(A4@5$51('& -A5 F5J. ' 15D*+ ' :(2? -A5 15: 41F? 46 -A5
-51'-C @'-A @A' : A A5 A2? F'?5&B D2&'?A '&M*'?'-'4&

(F(

./)0123 444

; : :

< <;(< <

,) -A5 D2&'21F? @515 -A*? @'&&'&G +2115& 2*15 ? 4& -A5 6'5 F? 46 -2 C(T'&G 51F'&2&F @2? E2H'&G 2 E4?- 'ED41-2&- 2:M*'?'-'4& 46 -511'-41C &52151 A4E5 A5 152F51 A2? 2 152FC +55& E2F5 2:M*2'&-5F @'-A -A5 E2&&51 '& @A':A -A5 + 44FC ?:5D-15 46 2$2115('&<= (D2??5F614E -A5 A2&F? 46 52&41(51F'&2&F0? ?'?-51(26-51 2 15'G& 46 2 65@ +1'56 F2C?('&-4 -A4?5 46 A51 G12&F?4& A45+*? 62-2 F5?-'&C A*&G 4$51 -A5 A4*?5 46 4'J M 2&F -A5 2--51 D1'&:5 '$5F -4 5&,4C A'? :14@& 4& C 64*1C521?(@A5& A5 @2? ?*::55F5F +C A'? ?'?-51 2-A21'&5('& <=S

-@2? &4- -4 +5 ?*DD4?5F -A2- 51F'&2&F 2&F ?2B +5 2(U 2--5&-'$5 -4 5& 21G5 -A5'1 5ED'15 -4 -A5 6* 5J-5&- 46 -A5 G54G12DA':2 'E'-? @A':A &2-*15 ?55EB 5F -4 A2$5 2??'G&5F '-(@4* F 4?5 -A5 4DD41-*&'-C &4@ D15?5&-5F 46 '&:41D412-'&G '&-4 '- -A5 A'-A51-4 '&F5D5&F5&- H'&GF4E 46 2$21665(+C -A5 E211'2G5 46 -A5'1 4@& A5'1 @'-A '-? ?4$515'G& -A5'1 56B 641-?(A4@5$51(@515 61*?-12-5F +C -A5 M*55& E4-A51

2GF2 5'&5, ?'?-51 46 4*'? Z (@A4(?2:1'6':'&G-A5 '&-515?-? 46 -A5 &2-'4& -4 A51 D15,*F':5?(5$2F5F -A5 D14D4?5F E2-:A *&F51 $21'4*? D15-5J-?(2&F '& -A5 5&F 5665:-5F 2& *&'4& +5-@55& A51 F2*GA-51 2&F 2 15&:A &4+ 5( )52& F0 +15-(A5'1 -4 :4&?'F512+ 5 5?-2-5? '& -A5 &5'GA+4*1A44F 46 2$2115 A'? @2? 2 E4?- 62-2 51141 A5 '&F5D5&F5&:5 46 2$2115 A2F A'-A51-4 +55& E2'&-2'&5F 5?? -A14*GA '-? 4@& ?-15&G-A -A2& -A5 @52H&5?? 46 '-? &5'GA+4*1?M +*- &4@ -A2- -A5 D5--C ?-2-5? 214*&F A51 A2F +55& 2+B ?41+5F '&-4 -@4 G152- 2&F D4@516* E4&21:A'5?('- 2? &4- -4 +5 5JD5:-5F -A2- ?4 655+ 5 2 +211'51 @4* F +5 4&G51 15?D5:-5F(41 -A2- '- @4* F &4- +5 ?@5D- 2@2C '& -A5 6'1?- :4 '?'4& 46 -A4?5 641E'F2+ 5 641:5? *-(2 -A4*GA -A5 '&F5D5&F5&:5 46 -A5 H'&GF4E E*?- +5 4?-(-A5 D1'&:5? 46 2$2115 E'GA- C5- E2'&-2'& -A5'1 ?-2-'4& +C 2 *&'4& @'-A -A5 15'G&'&G 62E' C 46 12&:5 41 D2'& C -A5 D15?5&- :4&&5J'4& @'-A 2 E515 D1'$2-5 '&F'$'F*2 -A5C 4?- +4-A -A5 4&5 2&F -A5 4-A51 9

-' -A5 E4?- 61'5&F C 15 2-'4&? ?*+?'?-5F +5-@55& -A5 2-A4 ':H'&G 2&F A'? &'5:5(F*1'&G -A5 '65-'E5 46 ?2+5 2 A5 ?4$515'G&? 2??'?-5F A51 '& -2H'&G D4??5??'4& 46 A51 -*1+* 5&- F4E'&'4&?(2? @5 2? '& 2 2C'&G -A5 F52F C 65*F? 46 -A5 52*E4&-? 2&F G12E4&-?(@'-A @A':A -A5C @515 15&- 2?*&F51 A5C ?*DD41-5F A51 @'-A -A5'1 21E? '& 15?'?-'&G A51 *&: 5)52&('?:4*&- 46 21+4&&5(@A4 : 2'E5F -A5 :14@& 4& -A5 G14*&F 5?? D15-5J- 46 '-? +5'&G

= ; b !

'E'-5F -4 E2 5 A5'1? 9 A5 2 '2&:5 @'-A D2'& @2? F12@& ?-' : 4?51 +C -A5 2$4@5F D*1D4?5 46 4*'? Z -4 ?*DD41- A'? &5DA5@(2?-4& F5 4'J('& -A5 : 2'E? 46 A'? F5:52?5F 62-A51 6 A5 F52-A 46 -A5 C4*&G A514(A4@5$51(2- 2$5&&2(@A4 C :A2&G5F -A5 15 2-'4&? 2&F 655 '&G? 46 -A5 -@4 :4*&B -1'5? 2$2115 A2F &4-A'&G 'E E5F'2-5 C -4 6521 614E 12&:5 A5 65 - F'?-1*?- 46 D2'& 4& E415 -A2& 4&5 2::4*&-(5?D5:'2 C 641 -A5 D14-5:-'4& 26B 641F5F -A5 52*124&-5?5 5J' 5?(2- -A5 A52F 46 @A4E @2? -A5 C4*&G 4*&- 46 51'&(51F'&2&F0? &5DA5@ X

12&:5 -44(?-2&F'&G 2 4&5(2&F 2- +2C(2G2'&?- -A5 15?- 46 *14D5(64*&F -A5 2 '2&:5 46 -A5 '-- 5 ?-2-5 46 2$2115 46 'ED41-2&:5 -4 A51(5?D5:'2 C 2- -A5 D15?5&- ,*&:-*15(@A5& -A5 D14,5:- 46 2& 5JB D5F'-'4& 2G2'&?- *'5&&5(+C -A5 :4E+'&5F 21E'5? 46 D2'& 2&F &G 2&F(&2-*12 C E2F5 4*'? Z F5B ?'14*? -4 ?5:*15 -A5 G44F.@' 46 2 D1'&:5 @A4 E'GA- +5 ?2'F -4 @521 -A5 H5C? 46 -A5 C15&55?(2? -A5 T'&G 46 21F'&'2 F'F -A4?5 46 -A5 D?(2- A'? G'1B F 5 '-A -A5?5 2E':2+ 5 F'?D4?'-'4&?(-A5 T'&G 2&F b*55& 46 2$2115 F5?D2-:A5F -A5'1 D 5&'D4-5&-'21'5? -4 4'?(521 C '& 2C(< <;(?44& 26-51 -A5 +2-- 5

1 6# / $'$ -$ L #&&# $ # 8 " 6# / = & $# / 6 # : --@B) -$*#$ + ## - 22) @)E / $ # 2@5B A + + #0 JJH' $ / $'$ $ # / &?$-'J### A 9 # $ + '#' #0 + ' #0 JJJ#' &$- #J' &$-' #' A # + /#' 6# # / $+- $ 2)BB'* A / $ $# + J' -' @EE

) 5?4&(*+ ?*D12

46 2$5&&2(@'-A 6* D4@51? -4 :4&: *F5 2 -152-C 46 2 '2&:5 2&F :4&65F512-'4& @'-A -A5 15&:A G4B $51&E5&-9

& -A5 E52& -'E5( )*&5 S-A(2& &G '?A ?M*2F14& 211'$5F 2- 2??2G5 '& *'D*?:42(A2$'&G < (E5& 4& +421F *&F51 A4E2? 15C(21M*'? 46 41?5-(6 '& 41F51 -4 :44D512-5 @'-A T'&G 51F'&2&F0? 21EC '& -A5 F5?:5&- 4& *'5&&5 A'? 2--51 641:5(:4&B ?'?-'&G 46 ; A41?5('GA- 2&F A52$C(644-(2&F ; D'5:5? 46 21-' 51C(@2? D 2:5F *&F51 4& 2F1'M*5 F5 4 5F4(-A5 4 F *H5 46 $2(G12&FB 62-A51 46 -A5 G5&512 @A4 @14-5 A'? &2E5 '& '&F5B '+ 5 :A212:-51? 46 + 44F '& -A5 5-A51 2&F?(*&F51 A' 'D ')' 56415 E2H'&G 2&C E4$5E5&-(A4@5$51(51F'&2&F(@A4 H&5@ -A5 5M*'$4:2 F'?D4?'-'4&? 46 -A5 2$2115?5 ?4$515'G&?(F5-51E'&5F -4 ?5:*15 A'EB ?5 6 614E -A5 2&&4C2&:5 @A':A -A5'1 ?-14&G D4?'-'4& 5&2+ 5F -A5E -4 G'$5 A'E 4& @A2-5$51 14*-5 A5

I + - #- +$L #, + #' -$ '#' -' 2() A '$ ' ?'D# "(K$' " P >' FE ?' 2@2F' $-' +$/ K &$-' &&JJJ'

$ / $'$L $' +':' -' F(@' A' 6 0 #*'$ /' $#" *6 >': </ 2B(5'* '- FE A 6 # ? /' ? #& ' -' @B3< /' 232E' (A $ #$ $' +'#J' -' 4'P@ '6#' :$ &#$ ' /# '& &' ?#' J' 0>' 0 # #'" $L , #' *' &? %

?'> "' - '8$ &#$ ' /' $' : "$' "#' ' $' 0 # #$ ' D &?' *' ?#' +' /' 0 +$

'& A'? C4*&G51 F2C?(?*:A2? 4*1 'E2G'&2-'4& @4* F' ?:21:5 CA2#5 641E5F' 46 A'E' 2-' 2&C D51'4F

-14 21-5 0& G*5112(5& :41-5 5+4 4?-12$2?5 E2&:5+4 5& 2? ?5&2 5?

F5' 14?-14(M*0512& -2 5?(M*0 5?D512&U2

*:'51-2 :4&6'2&U2 : 214 F2' $2&

2':*2&-4? 5 E'12$2&M*05' ?51'2(

5& M*'5& ?0 '&641E21'2 *& ?51 F'$'&4K

0 $ / '/' 6 L $' -' @E@

= ; S ; : :

2F4D-5F 59 2 : : 41F'&G C( ) *&5 < < ; (?5&- -4 15B M*5?- 2 6155 D2??2G5 -A14*GA -A5'1 F4E'&'4&?(@'-A -A5 F5E2&F(E4154$51(-A2- -A5C ?A4* F '&-1*?- ?'J 46 -A5'1 D1'&:'D2 641-15??5? -4 ?*:A 2$2115?5 2? A5 ?A4* F &2E5(2? 2 G*212&-55 641 -A5'1 &5*-12 '-C F*1'&G -A5 5JD5F'-'4& 5 2 : : 4ED2&'5F -A'? E4F5?- D14D4?2 @'-A -A5 2 -51&2-'$5(-A2- -A5 ?4$515'G&? ?A4* F +5 : 4E5 D21-'5? -4 -A5 4 C 52G*5(5&G2G'&G '& -A2- : 2?5 -4 15?-415 : 51-2'& D 2 : 5? '& A'? D4??5?B ?'4&(@A':A -A5C : 2'E5F((2&F D 5FG'&G -A5 @A4 5 ?-15&G-A 46 -A5 : 4&65F512 : C -4 D14-5 : - -A5E 2G2'&?- 2&C A4?-' 5 2--5ED-? 46 12&:5 9

A5 ?'-*2-'4& 46 -A5?5 *&641-*&2-5 D1'&:5? @2? '& -A5 A'GA5?- F5G155 5E+2112??'&G A5 &5*-12 '-C -A5C A2F ?4 4&G 2&F ?5F* 4*? C E2'&-2'&5F @2? &4@ -4 +5 2+2&F4&5F 2&F -A5'1 :A4':5(@A':A5$51 (D21-C -A5C 5?D4*?5F(E*?- :4ED14E'?5 -A5'1 D4??5??'4&? 4& 4&5 41 -A5 4-A51 ?'F5 46 -A5 C15&55?('& 5J:A2&G5 641 2& 2 C @A4?5 61'5&F?A'D A2F D14$5F +C 15D52-5F 5JD51'5&:5 M*'-5 2? F'?2?-14*? 2? A'? 5&E'-C &-A'? F' 5E E2(-A5C ?5&- 2E+2??2F41? '&-4 2?-' 5 -4 4+-2'& ?4E5 E4F'6':2-'4& 46 -A5 -51E?(41 2- 52?- -4 D14-12 : - &5G4-'2-'4&? -' ? ?4E5 F56'&'-'$5 2112&G5E5&- ?A4* F +5 E2F5 @'-A 4*'? Z 6

1 0 # # # $'$= JJ#J'&$-'HH: A $ / '$ '6# # # #0'#'&$-'### < / '2@(@' / ' $ ' : + '#' -'F@ A'9 # $' + '#' #0'J' &$-' #' '' A ' + ' ' #0'JJJ' ' =' ' 9 # $' $ ' / $" ' &$-'H:'A ' $ > M - ' + '#' #0'J' &$-' '#' '### A' -# ' -'&&&& JJJ'### A #$= ' $ > ' - ' -# ' -' / K' ' 0# - $'A'8$ #0$>' &&&& JJJ'## A 8$ #0$>' + '### 6# ' / ' $'$ $' + '#' #0 #0'JJ#J'&$-'JJ'

&' -A5' < -A' 46') * C(' -A5'1' D 5&'D4-5&-'21'5?' ?'G&B 5F' 2' -152-C' @'-A' -A2-' E4&21:A' 2-' 4'?(' +C' @A':A' 12&:5' 2&F' 2$2115' E*-*2 C' 2G155F' -4' F565&F' 52:A' 4-A51(' '&' :2?5' 46' 2--2:H(' 2G2'&?-' 2 ' 5&5E'5?' @A2-5$51 ' C' 2&4-A51' D14$'?'4&(' 4+$'4*? C' F'15:-5F' 2G2'&?-' D2'&(' '-' @2?' ?-'D* 2-5F' -A2-' &5'-A51' &2-'4&' ?A4* F' 2 4@' 2' D2??2G5' -4' -A5' 5&5E'5?' 46' -A5' 4-A51' -A14*GA' '-?' F4E'&'4&?N' 2&F' +C' 2' -A'1F(' 2$2115' D 5FG5F' A51?5 6' -4' F5: 215' @21' 4&' -A5' &G '?A' &4@' 2??5E+ 5F' '&' *'D*?:42(' 2&F' 2 ' -A4?5' :44D512-'&G' @'-A' -A5E 9

A14*GA' 2' ?'&G* 21' 2::'F5&-(' 51F'&2&F' @2?' E2F5' 2:M*2'&-5F' @'-A' -A5' D1'&:'D2 ' 21-': 5?' 46' -A'?' -152-C' +56415' '-?' ?'G&2-*15 I79' '?' 21EC' A2F' 15E2'&5F' '&B 2:-'$5' '&' '-?' M*21-51?' 214*&F' ':-41'2' 5$51' ?'&:5' -A5' 2&F'&G' 46' -A5' &G '?A ' 5' &4@' ?2@' -A5' A4D5 5??B &5??' 46' 6*1-A51' &5G4-'2-'4&(' 2&F(' F5-51E'&'&G' -4' 2&B -':'D2-5' -A5' ?-14H5' D15D215F' 641' A'E(' :4EE2&F5F' A'?' G5&512 ' -4' '&$2F5' @'-A4*-' F5 2C(' 2&F' 4::*DC' 2$2115

A5' *H5' 46' $2' :14??5F' -A5' +41F51?' 4&' -A5' ;<?-' 46') * C(' D14: 2'E'&G' -A2-' &4' A21E' ?A4* F' +5' 466515F' -4' -A4?5' @A4' $4 *&-21' C' ?*+E'--5F ' &' -A5' ; 1F(

I' + ' -' #- + -4E' '$' ' ' 4' ddl 21-2 / ' >' $' ' # " ' K$' $-' +$ / K ' '&$-' &&JJJ' ' ' & *#/ #$' & $ >' *' Q# '"P $ ' *' $'$ ' G$ ' + L / /' # ' ?# ' -' 0>' ?# ' +# L ' 6# ' -$- ' & $# # '" ?' ? $/ ' *' ?' - - /' $ >' G# ?' $ & ' * ' # ' ?' ?$ /

*' $' - # ' *' $+ - $' G? ' G$ ' # / & /' 0>' ? ' ? - ' *' $' G$ /' ' 0 $>' ? +' ' L /# $ /' ? ' >' # ' /' 0>' $ > ' # ' $' ' /$ /' P >' 23 ?' 2@2F' -# ' &&&&J& .' ' ?' #' $ /' 0>' ?' & L * +# >' *' ? ' - - /' + ' G# ?' ? ' *' ?' $& $' $ > '

(4E b!

A5 211'$5F +56415 2ED5 4&2 T'&G)4A&(@A4(2 -A5 @A' 5 A5 A2F +55& -A*? F2 C'&G @'-A -A5 '4&(A2F E2F5 &4 D14$'?'4& 641 F565&:5(A2F 2 152FC 2+2&F4&5F A'? :2D'-2 (52$'&G '- -4 E2H5 -A5 +5?- -51E? '- :4* F 641 '-?5 6 & -A5 64 4@'&G F2C9 -A5 :'-C(A2$'&G 6'1?- 4+-2'&5F 2??*12&:5 46 15?D5:- 641 2 '-? 612&:A'?5? 2&F 'E E*&'-'5?(?*115&F515F R 2 :'1:*E?-2&:5(K F5$4*- C 5J: 2'E? T'&G 51F'B &2&F(! '& @A':A @5 -1* C F'?:51& -A5 A2&F 46 4*1 + 5??5F 41F(@A4?5 E'12:* 4*? '&-51D4?'-'4& A2? +55& $'?'+ 5 -A14*GA 2 -A'? 5&-51D1'?5(*&F51-2H5& 641 -A5 @52 46 -A5 :A' 1:A(2&F -A5 5J-'1D2-'4& 46 -A5 2::*1?5F ?:A'?E K9

A5 14C2 5J' 5('& -A5 E52& @A' 5(A2F 15-152-5F -4 *E+'51(@A515 A5 ?4 ':'-5F -A5 2??'?-2&:5 46 -A5 *H5 46 4&G*5$' 5(-A5& 5&:2ED5F 4& -A5 &41-A51& 614&-'51 641 -A5 F565&:5 46 2C4&&5 A5 15&:A :4EE2&F51(A4@5$51(?-44F -44 E*:A '& 2@5 46 -A5 &G '?A(?-' C'&G '& *'D*?:42(-4 @52H5& A'E?5 6 +C 2 F5-2:AE5&- '&-4 2$2115 2&F -A5 *&641-*&2-5 E4&21:A(*&?*DD41-5F 5'-A51 +C A'? 4@& ?*+,5:-? 41

$ $ / > $ # " P > FB ? $- +$ / K &$- &&JJJ'# A 6# / $'$ -$ & / 6 : --BFE A BF) A 0$ &$ > / $" + ##' > JJJ &$- JJ# A $ L > - -# - &&&&J&' A + ' #0 JJJ ' &$- H:

+$ / K ?$ # & - $ / # ?# &? #& ' $

*Q# "' /# $ / G # /#+L # "' ? - " * ? G$ # 6# / $'$ -$ & / ?#"? $ & ? > ? / ?$' 0 + * > / 0$ &$ > / $" + 0> ? -$ # ?G # ? > ## > JJJ &$- JJ# A $ $ $// / ?# & * K$ &?0# ? - *' '# G# 6 G? + +$ / K & $ *$ -$ # ? # ?# /# & G$ M $-- $ * + ? -$ *' ?#m G D + *# #+$&>

A'? &5@ 2 C(@2? :4ED5 5F -4 :14?? -A5 E4*&-2'&?(2&F -2H5 156*G5 @'-A A'? 62E' C '& 12&:5 9

A5 *H5 46 $2 4?- &4 -'E5 '& D15??'&G A'? 2F$2&-2G5 4D5&'&G -A5 @2C +C 2 D14: 2E2-'4& 46 -A5 2-A4 ':H'&G(-A2- '- @2? '&-5&F5F 4& C -4 A4 F D4??5??'4& 46 -A5 :4*&-1C 2? ?5:*1'-C 641 -A5 D2:'6':F'?D4?'-'4& 46 '-? ?4$515'G&?(*&-' -A5 5&F 46 A'? D15 ?5&- 5JD5F'-'4& 2G2'&?- *'5&&5 14E @A2-5$51 :2*?5(-A5 D2&'?A G5&512 5JD51'5&:5F ?4 '-- 5 15 ?'?-2&:5(-A2- '& 5?? -A2& 2 641-&'GA- A5 4$5112& 2&F ?*+F*5F &521 C -A5 @A4 5 46 !DD51 2$2115 4 ?A41- 2 -'E5 ?*66':5F 641 -A5 ?*+$51?'4& 46 2 E4&21:AC @A':A('& F56'2&:5 46 ?-41E 2&F ?-12-2G5E(A2F E2'& -2'&5F '-? '&F5D5&F5&:5 *&'ED2'15F(@'-A 2 65@ +1'56 5J:5D-'4&?(641 ?5$5& :5&-*1'5? 6

& 15$'5@'&G -A5?5 5J-1241F'&21C 5$5&-?(@5 215 5F -4 F'?-1*?- -A5 :2D2:'-C 2&F :4*12G5 46 2 D1'&:5 @A4 :4* F ?4 152F' C 2+2&F4& A'? H'&GF4E(@'-A4*- ?4 E*:A 2? 6'1'&G 2 ?A4- '& '-? F565&:5)4A& A2F ?A4@&(A4@5$51(4& E415 -A2& 4&5 4::2?'4&(-A2- A5 @2? F5?-'-*-5 46 &5'-A51 5 @2? &4-('- E*?-

I $ / $'$ $ +:# 0 HHH: &$- J' A 6# / $'$ -BFF A = 0 # # # $'$ #0 # &$- #' A U P $ / 0 > 7 0 + $#/ $?$ # ? * $? 0$ / $? > G *># " * + ? # D# "/ + U $ / P $ / 0 > G# /# 6$/ 0 D# " $ / > M G ?$/ 0 #" # " # $'$ $? + + V 8$ #0$> +

#0 JJ#J &$- JJ'#. $? 0$ &$ $? > $ $ / G#* 0 $ $ / G +$ * - $ # " # > / $" + ## Q > HHH &$- JJ#

± $ #* / > L $ / P > 4E ?$- / +$ = / K &$- &&JJJ'# A 0 # = # $' #0 #' &$- ' A 8$ #0$> + ### #0 JJ#J &$- JJ'#

/ b!

+5 :4&65??5F(46 -A5 -5ED51 +5?- ?*'-5F -4 -A5 6'51:5 2&F ?-'11'&G -'E5? 4& @A':A A5 @2? :2?- 5 @2? 46 2& 2E'2+ 5 F'?D4?'-'4&(?4:'2 2&F 64&F 46 D52B ?*15(2&F ?4 '-- 5 ,52 4*? 46 A'? 14C2 F'G&'-C(-A2- A5 E'J5F 6'055 C '& -A5 F2&:5? 2&F 4-A51 5&-51-2'&E5&-? 46 -A5 A*E+ 5?- 46 A'? ?*+,5:-? '? G152-5?- F565:- @2? -A5 62:' '-C @'-A @A':A A5 15D4?5F -A5 :215? 46 ?-2-5 4& 62$4*1'-5?(&4- 2 @2C? -A5 E4?- F5?51$'&G '? G152-5?- E51'- @2? A'? 4$5 46 5--51? 9 !&641B -*&2-5 C(&5'-A51 A'? E51'-? &41 F565:-? @515 46 2 H'&F +5?- 2F2D-5F -4 5J-1':2-5 A'E 614E A'? D15?5&- D51' 4*? ?'-*2-'4&(41 5&2+ 5 A'E -4 :4D5 @'-A A'? @' C 2&F 15?4 *-5 2F$51?21C 41 -A'?(A4@5$51(E415 :4EE2&F'&G -2 5&-? E'GA- @5 A2$5 62' 5F A5 D51'4F A2F 211'$5F @A5&('& -A5 15G* 21 D14B G15?? 46 5$5&-?(2$2115 E*?- C'5 F *D A51 '&F5D5&FB 5&:5 -4 -A5 -@4 G152- &2-'4&? 4& A51 +41F51? @A4(2--12:-5F *' -A5 ?-15&G-A 46 A51 &2-*12 D4?'-'4&(2&F A51 D4 '-':2 @52H&5??(@4* F +5 ?*15(&4@ -A2- -A5'1 4@& F4E5?-':' F'?:41F? @515 A52 5F(-4 :2'E 52:A -A5 E4'5-C @A':A ?55E5F &2-*12 C -4 62 @'-A'& '-? 4@& -511'-41'2 'E'-? 21-':* 21 5$5&-? E'GA- 2::5 512-5 41 15-21F -A'? 15?* -(+*- '- @2? &4- '& -A5 D4@51 46 A*E2& G5&'*? -4 2$51- '-? 6'&2 :4&?*EE2-'4&

T'&G 51F'&2&F(@A4 F5?:1'5F -A5 ?-41E @A':A @2? &4@ G2-A51'&G 4& -A5 FF5 46 12&:5(15?4 $5F

5?4&(&25? 0 2$21. '?-4'15F* 4C2*E5F5 2$21B 12(-4E : #0 HHH: &$- ## > 15(--'BE4'BE(

b! =

-4 '&55- '- D14 E D- C('2&F :4 E E 2&F5F A'? G5&512 -4 :14?? -A5 E 4*&-2'&?(2&F 4: :*DC -A5 F'?-1': -? 46 Z'4@51 2$2115 & -A'? A5 5JD5: -5F -A5 :44D512B -'4& 46 -A5 &G '?A 0 + * - A5 @2? F'?2DD4'&-5F A5 21M*'? 46 -741?5- 2 5G5F(-A2- -A5 -'E 5(:4&?* E 5F '& -A5 15F*:-'4& 46)U2$2115 E 2F5 '- -44 2-5 641 -A5 5JD5F'-'4& 2G2'&?- *'5&&5(@A': A @2? &4@ D 2:5F '& 2 D4?-*15 46 F565&:5 5 4*F C :4E D 2'&5F -A2- A'? E 2?-51 A2F +55& F*D5F +C -A5 2-A4 ': H'&G(@A4 A2F *?5F A'? 2 C -4 E 2H5 :4&M*5?-? ?4 5 C 641 A'E ?5 6M 2&F('& ?D'-5 46 5$51C 15E 4&?-12&:5(A5 15B 5E +21H5F A'? @A4 5 641:5(@'-A4*- @2'-'&G 641 41B F51? R 2 D14:55F'&G(K ?2C? 51F'&2&F '& 4&5 46 A'? 5--51?(R @A': A -4*:A5? E 5 E 4?- F55D C(614E -A5 ?-2'& '- 52$5? 4& -A5 A4&4*1 46 -A5 E 4?- ?515&5 H'&G E C ?4&.'&. 2@(2&F -A5 G 41C 46 -A5 &G '?A &2-'4&(?4 F'?-'&G*'?A5F '& -'E 5? D2?- 641 A'GA 2&F :A'$2 14*? 5E D1'L5 K 9

A5 *H5 46 $2(-A*? *&?*DD41-5F(@2? &4 E 2-: A 641 -A5 15&:A *&F51 4&G*5$' 5(H15&G-A5&. 5F(E 4154$51(+C -A5 $5-512& :41D? 15-*1&5F 614E -2 C @'-A -A5 +12$5 2 2 ':5 &F55F(A5 &21B 14@ C 5?:2D5F +5'&G A5E E5F '& +5-@55& -A5 -@4 21E '5?(2&F 4& C ?*: :55F5F '& 2&-':'D2-'&G +C 2 65@ A4*1? -A5 E 4$5E 5&-? 46 2 2 ':5(U4 2? -4 E 2H5 G44F A'? 15-152- -A14*GA -A5 D2?? 46 4&:5?$2 5?(

1 ? D# "(?# / $' #0 # &$- '## A $ L K$ " ## ' ' 2F $- > - -# - &&&&J&#J A $ / K &$- &&JJJ'# A 6 0 (6 >: - F($ #$ $ 6# + ## #0 JJJ A 6 # ? / ? #& - @)%1 &$- J## A 0 # # #

: F

= = b!

2&F -A14@ A'E?5 6'&-4 2ED5 4&2 9 '-A51 A5 @2? ?D55F'C 64 4@5F +C -A5 15&:A G5&512 (2::4EB D2&'5F +C)52& F0 +15- & -A5 ; -A 46 4B $5E+51(-A5 +5?'5G51? E2F5 2 F5?D512-5 -A4*GA '&B 5665:-*2 2??2* - 4& -A5 :'-C(@A':A @2? 15D52-5F @'-A 5M*2 ' 641-*&5 4& -A5 -@4 64 4@'&G F2C? A5 +5 52G*51'&G 641:5?('& -A5 E52& -'E5(@515 ?-12'-5&5F 641 D14$'?'4&?N 2&F 2- 5&G-A(26-51 2 ?'5G5 46?4E5 @55H?(4& 521&'&G -A5 211'$2 46'615?A 15'&641:5E5&-? *&F51 -A5 *H5 46 2,212('6 -A5C +14H5 *D -A5'1 5&:2EDE5&-(2&F @'-AF15@ 2:14?? -A5 E4*&-2'&?N 2&F @'-A -A5E 62F5F -A5 2?- 12C 46 A4D5 641 -A5 15?-412-'4& 46 -A5 *&641-*&2-5 E4&21:A 46 2$2115

1 8$ &#$ / $: "$ $L / ? +## $ > J- # *? / D # ?# & / &L "

U +$ # +0 $+ / * *# $ & $0 $'$V

0 $ / / 6 $ -@E@ &? G$? - G *? / D *! $!$ $?$? 0 "? # ? *# / ?# &&$ # 22EE ? $ / 4EEE * $# / $ / , #-- / ?# G $ $ $ > - '## B+ / ? '$ $>$ / &? P'# A + / $ " &?$-'JJJ### A 0 # # L # $' #0 #$- '###'#J A 0$ &$ +'##' Q >JJJ &$-' JJ#'NA $ 0$!$ $ $ $ 2@2M P $ $ / $?$ # /(0

-$ / ? +$# / * ? # /$> # ? # # ? &? #/ * ? > ? >+$/ + *$# $ / * # $ +- & ' ? # / +# # / # " ? " &> * $ /# $'H# $ 0$L !$ &$-' J## . D # $/ $ > -# # ? # ? $?" $/ / &# / $ / # ? * ? + " '#' / ? * ? # & G P $ /# / P F4 / 2@2) $ / $?$ # * G / 0 2F ? * ? J > $ <A ?$-->' $ $ $?$' $ +# L * ?$/ - G / #'#/ ? +' # # * ? >G " -$ $ / 0>' / $?' 6# / $'$ - -/ A : ' #0 HHH:' &$-'JJ' JJ# .' ? # 0 /# - #/ 0>' #/ # ? ? &$? / $' &? &? * &$ # ? # G / +# # * $+ < $ / ? # *$ #'! >

&' -A5' <?-' 46' D1' ' '&' -A5' 64 4@'&G' C521(' < < (' 51F'&2&F' 5665:-5F' 2' -1*:5' @'-A' 4*'?' Z (' 5EB +12:'&G'-A5'1' 15?D5:-'$5' -511'-41'5?' @5?-' 46' -A5' D?' -' :4&-'&*5F' 2' C521(' 2&F' 2-' '-?' 5JD'12-'4&' @2?' 15B &5@5F' 641' 2' ?'E' 21' -'E 5 9' A'?' 2112&G5E5&-(' +C' @A':A' 4*'?' ?2:1'6':5F' -A5' '&-515?-?' 46' A'?' 2 C' -A5' T'&G' 46' 2$2115(' G2$5' 51F'&2&F' 2ED 5' -'E5' 641' ?5-- '&G' 2&F' 641-'6C'&G' A'?' &5@' :4&M*5?-?N' @A' 5' '-' 56-' -A5' @21' 4D5&' '&' 2' M*21-51' @A515' A5' @5 ' H&5@' 4-A51?' @515' E415' '&-515?-5F' -A2&' A'E?5 6' -4' D14?5B :*-5' '-' @'-A' $'G4*1' A5' -152-C' E*?-' +5' 2 4@5F' -4' +5' E415' F565&?'+ 5' 4&' -A5' ?:415' 46' D4 ':C' -A2&' 46' G44F' 62'-A 6' A5' 2 '5?' 4*F C' '&$5'GA5F' 2G2'&?-' -A5' -152:A51C' 46' -A5'1' :4&65F512-5(' @A4' A2F' ?4' *&B ?:1*D* 4*? C' ?2:1'6':5F' -A5' :4E E4&' '&-515?-' +C' 15B

#& /'0>' ?' -$ # ?' ?# #$ ' $' ' *' ?' + ' #D# '" JL $+- ' *' ?$' ' / & ' 0>' G?#&?' ?' # ' *' ?' *$? ' $ ' '# # /' ' ?' &?# / ' ' ?' ?# /'$ /'* ?' " $ # I' $ $ ' 6# ' / ' $' #- L +$ ' ' +'#' -' : 'A' >=' + ' $/ $' +'J###' --'4@E' NA 4@F'A'8 #&&#$ /# #' +' '#' #0' J#' -'3F<' #0' J##' -' 2B3 A' $ #$ $' +' ##' #0' JJJ' &$-' JJ## A '& $' #/#& $V' $>' 8 #&&#$ /# # #' $ # ' ' ?#' & 'R'&?' # + / #+#"# +#' &?' $' # 0$ /#'$' + ' -' $' $' -$" $' ' ' ' $ $ / ' $' #" #*#&$ " # # ' + ' / ' ' / "?# ' " # $--$ $ # - # #+#' &?' # *$& '$ - ' $ $ $ ' $' $ &#$' ' $' &#=' $ ' &?' " # + / #+$+ ' + ' ' & / ' &?' $' '$ - + ' $' " $' /$ $'-$ ' /# -$" $R' ' /' $ #$' + ' '#' #0' J##' -' 3(X' $ & &' : #' ?' # ' $+0$ $/ ' $' ?' -$-$' & ' G # ' ' $&?#$=' ' #' ?$' ?' $>' GD' G' ? ' ?$' #"?' - & $ # '" ' ?' $' + #' ' *' ?' $? #&' D# '" # '+$D# '" ?# ' & 'G?#&?' "$ / /' #+ - >' $' $' +$ ' *' - #&>' ?' & / + ' ' ' 6 '$&& + -$ # ' ?# 'G# ?' '$ #L ' - /#& # ' - & # '" ? ' & , & ' #D >' ' ' * +' # ' ? ' & , & ' ' ' && /' ? G ' <' $ /' ?' *$# ' *' ?# ' - /#& # ' +$>'0' & #' /' $' ?' 0 ' L * $ # ' *'?# '$ " + ' - ' /# $&?#$' #' ' $+#"' - # 'F2' 2@24

F' ' F

= b!

'5$'&G 12&:5 614E -A5 D4@516*' F'$51?'4& A5 @2?C 5&G2G5F -4 E2H5 4& A51 @5?-51& +41F51? -' '? &4 ,*?-'6':2-'4& 46 @14&G -A2- ?'E' 21 @14&G? A2$5 +55& :4EE'--5F +C 4-A51?N +*- -A4?5 @A4 :4EE'- -A5E /2&F -A515 @2? &4- 4&5 46 -A5 2 '5? @A4 :4* F 5?B :2D5 -A5 'ED*-2-'4&(2E'F -A5 D4 '-':2 D146 'G2:C 46 -A5 -'E5?(7:51-2'& C 64165'- -A5 D1'$' 5G5 -4 :4ED 2'& 9

I 8 #&&#$ /# # + '# #0 J# --32 3F A - /# $- &?#$' # 0# - A $ > - -# - JJJ'### ? ? @ ?* * - #'$ $ > G$ & & / /' $ &? # # ? $+ * /# $ / ? Q# "* " $ / ? +- $ /' ? - - > + = / $ + J###' --4@(A 4@3. ? $ ##$ ' > # $ K G$ '- '$ &?L # 7 # G$ $ #*# /' $ /' + > G 0>?#+ 0?$ * *?# ' #" # L / - #' 23 ? 0#/ + J### -'4B4. > ?# $ > -$#'$" /' $ $&D $ &' # 8 # G?# ? ? ? - G 'G ' & - $ 0>$ / & ? , $ $ + -' #- + + #'' -$ #')5. ?# G$ # /# &' & $/#& # *' ? $ > #" /' >*#' '/$> 0 * '$' ? < $ /'#*+$/ G# ?' ? - #'# > *' Q# "* L /# $ /' + 0'$ G /' 0'$ " $ # /# - $>' *' - *#/> $ # >' +$ &? /'# ' ?$'$" &?' *' & '# '# ' #"+$ #K /' 0>' ? &?' ?# #$?$' # ' ? ' $ * ' *# /' & + + ' '# '# ' & + - $ > G # ' $-# ' 6# ' * " $ /' ' '## - -' 54'5 (< /' 2)3@=5'* " A # + /#' 6# '/ ' $ $# ' + 'J' -' BFB. /# $ /' G? $-L - # /' 0>' 6 > : ' $L #*>' ? '$& ' *' ?# ' +# # ' # ' ? ' * G# "" + + ' * /' ' ? ' " /' ?$' ? ' $?$/' $ & / /' ?# ' - G 6 0 ' #* ' *' 6 > : < /' 2B(5' -' F5. ? ' -$ # ? G # '$ ' # ' 6# '$ # ' / #' ' + ' - 0$0# > '* + ? ' ' *' ' *' ? ' $ #& G?#&? - '#/ ' ?$' # ' &$ ' ? ' * ' '& *# + ' ? ' $ > ' # ' ?$ ' # ' 0 ' 0# /# "' 0 G " " $ /'$ /' ? ' + - < $ L " $"' G?#&?' $ ' # ' $ #&#-$ + $> + ' ' $? #K ' &? $ & # " &> 0 #& $ # '?$' '* ' 0'#L $ $ ' 0 '" $ > L & #' /' $ ' ? ' 0$ # ' * ' ?# > ' +#"?' G ' / 0 ' ?# ' G? ' $ + - ' ' & &# ' ? ' + #*$ # /# & -$ &# ' $ /' & $/#& # ' # ' ? ' *' ? ' - # /' / ' '# G ' ? ' 1 &# &' *' /#- +$&>' $ ' ? ' - $& # /' G$ ' $' + '"$+ ' *' *# ' $ /' *$? /' # ' G?#&?' ? ' + ' + ' ? ' - $ # ' *' ? ' -$ # ' ? ' + ' " /' * ' /# # "' ? # ' # & # >

51F'&2&F 2$2' 5F A'E?5 6'46'-A5' '&-51$2 '46'15D4?5(' &4@' ?5:*15F(' -4' ?5-- 5' A'?' &5@' :4&M*5?-?' 5' A2F' -12&?65115F A'?' 15?'F5&:5' 6'1?-' -4' *1G4?(' 2&F' 26-51B @21F?' -4' 4G14&4(' -A2-' A5' E 'GA-' +5' &521' -A5' -A52-15' 46' 4D512-'4&?' 5' @2?' '&F562-'G2+ 5' '&' 12'?'&G' 15'&B 641:5E5&-?' 2&F' ?*DD '5?(' 2&F' 5JD15??5F A'?' '&-5&-'4&' 2-' 4&5' -'E5(' &4-@'-A?-2&F'&G' -A5' F5: '&'&G' ?-2-5' 46' A'?' A52 -A(' -4' -2H5' -A5' :4E E2&F' '&' D51?4&' 5' ?A4@5F A'?' *?*2' ?2G2:'-C' '&' $21'4*?' 15G* 2-'4&?' 641' 'ED14$'&G' -A5' D4 ':5(' A52 '&G' -A5' F4E5?-':'65*F?(> 2?' 62-2' -4' 2$2115' 2?' -A5' 21E?' 46' '-?' 5&5E'5?(> 2&F' :4&6'1E'&G' 2&F' 5J-5&F'&G' '-?' E*&':'D2' D1'$' 5G5?' 2&F' 'EE*&'-'5?(' ?4' 2?' -4' :4&:' '2-5' -A5' 2665:-'4&?' 46' A'?' &5@' ?*+,5:-? 9

&' -A5' ; 1F' 46' 21:A'<<(' -A5' 5?-2-5?' 46' 2B $2115' -44H' -A5' *?*2' 42-A?' 46' 2 5G'2&:5' -4' T'&G' 51.' F'&2&F 6' &')*&5'<-A('<<('-A5' 2-AM ':'E4&21:A(' +C' 2' ?4 5E&' 2:-' '&' :41-5?(' A5 F' 2-' *1G4?(' '&:41D4B 12-5F' A'?' &5@' :4&M*5?-?' '&-4' -A5' H'&GF4E' 46' 2?B -' 5 U' A5' 5$5&-' 5J:'-5F' ?4E5' ?*1D1'?5(' :4&?'F51'&G' A'?' E415' '&-'E2-5' 15 2-'4&?' @'-A' 12G4&' *-' '-' @2?' -4' -A5' 21E?' 46' 2?-' 5' -A2-' A5' @2?' :A'56 C' '&B F5+-5F' 641' -A5' :4&M*5?-N' 2&F' '-' @2?' 4&' A51' ?*D51'41

I' $ $' / ' >' $' ' # " ' &$-' J'# A 8$ #0$>' +'###' #0' K$ ' '2F 2@2F'$- $= HHH'&$-'# / K' '&$-'&&JJJ'# A '

+':' #0' HHH:' &$-' J'# A' P' 9 # $' +''#' #0' J' &$-' 9 # $' +''#' #0' J' &$-' J### J&##' A' $ 0$!$' $ ' ' JJJ>#' J ### A 8$# / K' / ' $ L $ ' 2@2@ A 8$ #0$>' +' ###' 0$!$' $ ' $ ' ' $ ' 2@2F #0' HHH' &$-' #' A' '

' 6# ' / ' $'$ ' -$' ' +':' #0' JJJ'' &$-' '##' & '/ '6 #6 ' :'-- BF5' $ / '$' 6# ' / ' $ ' :' B4E A ' +''' #0' JJJ' +'#' -' FB

= S b!

@52 -A 2&F 15?4*1:5? -A2- A5 15 '5F 641 E2'&-2'&'&G '- '-A -A'? @2? :4E+'&5F -A5 D4 '-': :4&?'F512B -'4&(-A2- -A5 2$2115?5(&2-*12 C -*1+* 5&- 2&F 62:-'4*?(@4* F +5 A5 F E415 52?' C '& ?*+41F'&2B -'4&@A5& 2??4:'2-5F @'-A 2?-' 5(-A2&@'-A 12G4&(@A515 -A5 ?D'1'- 46 '&F5D5&F5&:5 @2? A'GA51(2&F 46-5& E2&'65?-5F '-?5 6'& ?*:A +4 F 2??51-'4& 46 D4B D* 21 1'GA-? 2? 62 ? E4?- *&@5 :4E5 4& 2 14C2 521 4 2 -A'? E*?- +5 2FF5F -A5 F5?D2'1 46 '??*5 +C A'? D15?5&- E211'2G5(@A':A A2F E*:A 2+2-5F A'? D51B ?4&2 '&-515?- '& 5& 21G'&G -A5 5J-5&- 46 A'? D2-1'B E4&'2 F4E2'&?

415'G& @1'-51? :A212:-51'L5 -A5 :4&M*5?- 46 2B $2115 2? 2 +4 F(*&+ *?A'&G *?*1D2-'4&(15&F515F E415 4F'4*? +C -A5 E2?H 46 15 'G'4*? ACD4:1'?C A5 &2-'4&2 @1'-51?(4& -A5 4-A51 A2&F(A2$M 5EB D 4C5F -A5'1 D5&? '&F*?-1'4*? C -4 $'&F':2-5 '-M ?4E5 5&F52$4*1'&G -4 12H5 2 G44F : 2'E 641 2?-' 5 4*- 46 '-? 2&:'5&- *&'4& @'-A 2$2115(2 E4?- 2? 2&B :'5&-('&F55F(2? -A5 441'?A :4&M*5?- -A51? 15B ?41- -4 :4&?'F512-'4&? 46 5JD5F'5&:C(15 C'&G 4& -A5 E*-*2 +5&56'-? 46 -A5 :4&&5J'4& -4 +4-A H'&GF4E?M 21G*E5&-? @A':A D14$5 '-- 5 5 ?5 -A2&(-A5 @52H&5?? 46 -A5 :2*?5 9 2C E415 41 5?? ?-15?? 4& -A5

I ? ? &$ $ K +#"? + $ " ?$ $ / / K$ $D# "' ? ?# ? # #$? / D * $ L * + 0 #J$ # / /.' *# / ? # >' # ? - $& #& * *' ? $0 /$ G$ $ * /#L $&' ? ' + &? $0 +# $ '# L $ /' $ + * $'$ ' # ' $/ *' ? '# -# /' - & - * ? ' ?$ /' + $ / $ 0>' ? ' ? '* / * '?# #"# ' ' $ # * /' ' ? ' - - * # ' ? > ? "?=0 /' -? ' $ /' ' #? ' Q# "' * &$ # '#'$- '0 ' ' > # * ? ' + # ' $, ' =/ ' $? # #$ -$ $' + '#' #0 '### '&$- ' '#.

b ! =

:5 5+12-5F + * 46) * '*? (46 5+ <S-A(< < ; (+C @A':A A5 5J:4E E *&':2-5F -A5 ?4$515'G&? 46 2B $2115(2? A515-':?(?:A'?E2-':?(2&F 5&5E'5? 46 -A5 :A*1:A(15 52?'&G -A5'1 ?*+,5:-? 614E -A5'1 2 5G'2&:5(2C'&G -A5'1 F4E'&'4&? *&F51 2& '&-51F':-(2&F F5B '$51'&G -A5E 4$51 -4 2&C @A4 ?A4* F -2H5(41 A2F 2 152FC -2H5&(D4??5??'4& 46 -A5E 9 4?-('&F55F(215 :4&-5&- -4 15?- 4& -A'?(2? -A5 -1*5 +2?'? 2&F 41'G'&2 G14*&F 46 -A5 :4&M*5?- A5 -4-2 ?' 5&:5 46 -A5 2-A4 ':H'&G 15?D5:-'&G -A'? F4:*E5&-(+5641 -A5 '&$2?'4&(2&F -A5 4E'??'4& 46 -A5 &2-'4&2 A'?.9 -41'2&? ?'&:5 -4 D14F*:5 '-(A2? :2*?5F E*:A ?:5DB -':'?E 2? -4 '-? 5J'?-5&:5 2&F 2 -A4*GA '-? 15:5&- D*+ ':2-'4& D*-? -A'? +5C4&F F4*+-(-A5 '&?-1*E5&- :4&-2'&?('& EC ,*FGE5&-(?-14&G '&-51&2 5$'F5&:5 641 F'?-1*?-'&G -A5 2::*12:C 46 -A5 F2-5 26 J5F -4 '-(@A':A ?H4(* F .A2$5:__+55& D4?-51'41 -4 -A5 '&$2?'4& 2 :'1:*E?-2&:5 E2-51'2 C 2665:-'&G -A5 21G*E5&- 2&F @A':A E2H5? -A5 D2D2 ?5&-5&:5 &4- -A5 41'B G'&2 +2?'? 46 -A5 @21(+*- 4& C 2 ?2&:-'4& ?*+?5B M*5&- C 4+-2'&5F -4 :4$51 '-? '&,*?-':5(2&F 2*-A4B 1'L5 15-2'&'&G -A5 61*'-? 46 '- 6

I ? #"# $ 0 *P L +> & 0> A 0 ?# '" # $- $ #$ $ +J ?# A + > G -$ - / F< / :$ &#$ & / ?$' $? $ & 2)5B A W P $ +' $?$ #= +> / '" V $+ V $> ? 0 # ? $ & &# #$ > > *? ? ? # ? ' # *? ? :$ #&$ U - /# # *# # A - /#/ :$ &#$ /# # * J& + + #&$ $ $? +#K$ $ #$ $ & $# # ? -L +$ /#& +# -- #&## = - /#J ? *$+ 0 *P # R Y& Y& R $ +# *0 23 ? 2@2F ? #= G #0 > # $ / & # / M $ *G?#&? # 0 * /#

== b ! ‘ ‘

-‘ @A2-5$51‘ 2-A41'-C‘ ?*:A‘ 2‘ ?2&:-'4&‘ E 2C‘ A2$5‘ A2F‘ '&‘ -A5‘ ?'J-55&-A‘ :5&-*1C(‘ '-‘ @' ‘ 6'&F‘ '-- 5‘ 15B ?D5:-‘ '&‘ -A5‘ D15?5&-(‘ 2-‘ 52?-‘ A5C4&F‘ -A5‘ 'E'-?‘ 46‘ -A5‘ C15&55?’ A5‘ 4& C‘ @2C‘ '&‘ @A':A‘ -A5‘ M*5?-'4&‘ :2&‘ +5‘ 62'1 C‘ -1'5F(‘ E*?-‘ +5‘ +C‘ -A4?5‘ E 2J'E?‘ 46‘ D*+B ':‘ 2@‘ *&'$51?2 C‘ 15:4G&'?5F‘ 2?‘ ?5-- '&G‘ -A5‘ '&-51B :4*1?5‘ 46‘:'$' 'L5F‘ &2-'4&?ℕ‘ 2‘ ?:'5&:5(‘ '&F55F(‘ 'E D51B 65:- C‘ F5$5 4D5F‘ 2-‘ -A2-‘ -'E 5(‘ +*-‘ '&‘ '-?‘ G5&512‘ D1'&B :'D 5?‘ -A5‘ ?2E5‘ 2?‘ &4@(‘ 64*&F5F(“ 2?‘ -A5?5‘ 215(‘ 4&‘ -A5‘ 'E E*-2+ 5‘ +2?'?‘ 46‘ E412 '-C‘ 2&F‘ ,*?-':5

-A5‘ 14C2‘ 21:A'$5?‘ 46‘ 21:5 4&2‘ A5‘ 5F'-41(‘ 4& 12&:'?:4 1-'L‘ C‘ 2&L(‘ A2?‘ 2::4ED2&'5F‘ '-‘ @'-A‘ 2& 5 2+412-5 F'?M*'?'-'4&(‘ '& @A':A‘ A5‘ E2H5?‘ -A5‘ 2D4?-4'-‘ ?5&-5&:5‘ -A5‘ G152-‘ 2*-A41'-C‘ 641‘ -A5‘ :4&M*5?-‘ -‘ @2?‘ 2‘ G152-‘ -1'*EDA(‘ *&F4*+-5F C(‘ -4 +5‘ 2+5‘ -4‘ D14F*:5‘ -A5‘ F4:*B E5&-(‘ -4 @A':A‘ -A5‘ D2&'?A‘ A'?B -41'2&?‘ A2F‘ +55& ?4 4&G :A2B 5&G5F‘ '& $2'& +C‘ 6415'G& @1'-B 51?(‘ 2&F‘ 5J'?-5&:5 46@A':A‘ E'GA-‘ @5‘ ‘ +5‘ F4*+-5F(‘ ?'&:5‘ &4 15:41F‘ 46‘ '-‘ 2DD521?‘ 4& -A5‘ D2D2‘ 15G'?B -51‘ / +21:2(‘ -4E:‘ ''‘ ‘ JJJ‘ :2D‘ JJ'7 21'?‘ F5 12??'?(‘ E2'-15‘ F5?‘ :515E4&'5?‘ 46‘ -A5‘ :A2D5‘ 46‘)*'*?‘ ‘ 2&F‘ 54 Z(‘ E2H5?‘ &4 E5&-'4& 46+*‘ 41‘ 5J:‘ :4EE*&':2-'4&(‘ 2-A4*GA‘ $51C‘ 5J2:-‘ 2&F'D21-':*21‘ '& 15D41-B '&G ?*:A‘ 62:-?‘ / 15M*'G&C(‘ 4-':5?‘ F5?‘ ‘ F*‘ 4C(‘ -4E‘ '''‘ D‘ 7 A515'?‘ &4 152?4& -A2-‘ ‘ H&4@ 641‘ F4*+-'&G -A5‘ G5&*'&5&5??‘ 46‘ -A5‘ D15?5&-‘ '&B ?-1*E5&-‘ A515‘ 215‘ :4&: *?'$5 152?4&?‘ -4‘ EC‘ E'&F(‘ A4@5$51(641‘ 15,5:-'&G'-?‘ F2-5(‘ 2&F‘ 2??'G&B

#‘ '“‘ #‘ ‘ + ‘ #+‘ - #‘ ‘ ?‘ & ,
2‘ ?‘ 0‘ / &‘)‘ ?‘ $ /‘ $?$ #‘ $‘ ?$'#‘ '“‘ - >‘ ! # /‘ ? + ‘ ‘ ‘ #‘ H‘ $ /‘ 0‘ $ + ‘ G# ?‘ ?#+‘ $"$#‘ M$ /‘ -$#‘ $ /‘ ?‘ &? &?‘ $‘ &?$ " ‘ * ‘ G?#&?‘ ? ‘ G$‘ ‘ - & ‘ # ‘ *#'‘ + ?‘ $‘ A F /‘ 7 # ?‘ ?#‘ 0‘ ? ‘ /#L ‘ ?$‘ "#'‘ $? ‘ /$ /‘ + ‘ P >‘ F2 ‘ 2@2F‘ #& /‘ 0>‘ ‘ $ > ‘ - ‘ -# ‘ -‘ &&&&J&'##.‘ ?#‘ $ ‘ #‘ " $‘ # ‘ # ‘ #+ - ‘ 0 # '“‘ /#L & /‘ $"$# + ‘ $ ‘ $ # ‘ G?$ L ' ‘ "$" /‘ # ‘ $ #$ & ‘ G# ?‘ $ & ‘ $"$# ‘ ? ‘ &? &?‘ ? ‘ ' #" ‘ *‘ $'$ ‘ $ ‘ ' ‘ + # /‘ ‘ ? ‘ $ # ‘ # *‘ $ >‘ * ? ‘ ?$ ‘ ‘ G$ ‘ #‘ *‘ ? ‘ #+ +# ‘ /$ " ‘ # ‘ G?#&?‘ #‘ /‘ *‘ *$ # '“‘ # ‘ ? ‘ &?# + ‘ G‘ #‘ #‘ 0'# ‘ ?$‘ ?#‘ & /‘ 0 ‘ ‘ " $‘ # ‘ # ‘ + - ‘ G /‘ ?$' ‘ 0 ‘ L # >‘ - * ‘ #‘ * & ‘ ‘ $'$ ‘ $* ‘ ? ‘ - 0 #&$ # ‘ *‘ ? '*# ‹‘ G?# ‘ ‘ ? ‘ ? ‘ ?$ / ‘ ?# '“‘ & /‘ 0 ‘ + ‘ $=

5 E *?- G4 +2:H 2 ?-5D +5C4&F -A5 @21(-4 -A5 D14J'E2-5 :2*?5 46 '- A'? @2? 51F'&2&F0? F5B E2&F 46 2 6155 D2??2G5 641 A'? -144D? -A14*GA 2. $2' 5 A5 F5E2&F @2? D5165:- C 62'1(2&F '& 41B F'&21C :2?5? @4* F F4*+- 5?? A2$5 +55& G12&-5F +C 2 &5*-12 &2-'4& N +*- -A2- &2-'4& E *?-(26-51 2 (+5 -A5 4& C ,*FG5 46 '-? D14D1'5-C(2&F 2$2115 E2C 6'&F 2 ,*?-'6':2-'4& 641 A51 156*?2 4& -A5?5 G14*&F? '1?-(-A2-('& A51 @52H 2&F F565&:5 5?? ?-2-5('- @2? 2--5&F5F @'-A F2&G51 -4 A51?5 6N ?5:4&F C(-A2-(2?

$?$?$? " $ + $& $ /G$ # " ?$'# "- ' /# ** & $? /0 *+ L G /0> ? -$ #& $ & J& ++ #&$ # & $# /# ? 0 *0 $>A 4 / *$& ? 0 *0 $> +$D -$ /$ # '$* + # &? $ +$ $ $ $' / 0 ?$? 0 *P >F2 # # / /. # & > ? L #+ 0 ? ' >* + *JL - # $ - * & >& # &#/ # 0 ?* G? & " L ? A (? /# $ / +$D ? + # *? -$-$ J& +L + #&$ # # ? # ?# - #'$ & - / & G? ? ? /# & L ? " / *? G$ '# ? ?# +$ #* ? ? $'$ G? # G /?$' ' /?# - - , # $ ** & $ > $?# ?# $ + > $>? ?# "- *? ? "$ #' ' '#/ & $** / /0> ? # & *& +- $ > G # $ 0 #J$ $ 0$!$ +$ / K $ / $ > G? G?# ? > $ / ' $ & *J& +L + #&$ # -$ /# ? & # L > ? - 0 #&$ # *? 0 *P > "#' # #+$L # *? ? J# & *? ?$ *? 0 $ >< $ # & $ " ? # J- #&$0 ? ? # * & *+ + $?# ? ?$? ? /$ *? ? 0 *0 $ > 23 ? 2@2F # < ?$ # ? /0 - $& /$ + - # /- # ? ? & , $ /& L > & /? ?$' ' /$? " /*# 0 G$ - 0$0 > 0 $# /$? ? # $ & *? ? $? #& D# " # / 0> ? /# + G?#&? # ? G ? ? ' #" *$'$ $' J& +L + #&$ + ' ?$ #+/ G?#&? ? $> ?#+ *$ /$? $+ + $>? ?# + /$ **#&# G$ $ * $# # "?# $&, # # # $/ '# " $ +$> ?# D + #+ ?$ 0 - ? ? /# & # ?$ # # G ?< 0 ? ? #+- $ #"? # G?#&? # # '# G /0> ? G? L $# + / * & * $ -$-$ / & '# **#&# >$ $ /0> ? " ? $ /+0 *? /# L , # # # '# / G ? - L & >

==; b!

+C 2 D15$'4*? 2&F 5J'?-'&G -152-C @'-A D2'&(-A5 $2 'F'-C 46 @A':A @2? 15:4G&'?5F '& A51 &5@ 4&5 46)* C < -A @'-A 12&:5(?A5 A2F 2G155F -4 1566*?5 -A5 1'GA- 46 D2??2G5 -4 -A5 2--51 &2-'4&(?A5 :4&?5B M*5&- C :4* F &4- G12&- '- -4 D2'& @'-A4*- 2 $'4B 2-'4& 46 A51 &5*-12 '-C -A'1F C(-A2- -A5 F5E2&F 46 2 D2??2G5(A4@5$51 ,*?- '& '-?5 6(@2? :4*D 5F @'-A 2&4-A51(-A5 ?*115&F51 46 -A5 641-15??5?(@A':A E*?- :4ED14E'?5 -A5 '&F5D5&F5&:5 46 -A5 H'&GF4E 6

*- 2 -A4*GA(641 -A5?5 152?4&?(-A5 ?4$515'G&? 46 2$2115 @515 @2112&-5F '& 1566*?'&G 51F'&2&F0? 15B M*5?-(-A5C @515 &4- -A5156415 2*-A41'L5F -4 F5: 215 @21 2G2'&?- A'E(@A':A -A5C $'1-*2 C F'F +C 5&-51B '&G '&-4 2 F565&?'$5 2 '2&:5 @'-A A'? 5&5EC 4*'? Z (2&F +C D 5FG'&G -A5E?5 $5? -4 E2H5 @21 4& -A5 &G '?A 2&F -A5'1 :4&65F512-5?% 2& 21-': 5 D4'&-B 5F C F'15:-5F 2- -A5 2-A4 ':H'&G

1*5('&F55F(-A5 -152-C 46 4'? A2F &4- 15:5'$5F -A5 12-'6':2-'4& 46 -A5 2$2115?5 ?4$515'G&?% +*- '- @2? 5J5:*-5F +C -A5'1 D 5&'D4-5&-'21'5? F* C 2*-A4B 1'L5F% 2&F(:4&?'F51'&G -A5 '&-'E2-5 '&-51:4*1?5 +5B -@55& -A5 -@4 &2-'4&?(@2? *&F4*+-5F C E2F5 @'-A -A5'1 6* H&4@ 5FG5 2&F :4&:*115&:5 ! &F51 -A5?5

1 + - #- +$L # ? G ' G?#&? $+ / #, + '#' -$ '#' B5 ? # &'#' J& / / 0> && /# '" 8$# / K / $+ G '*? + '#+- $ $ 0$!$ > ? '* - $& , # /$ / ? # &L G #"# $ > / +$ / / 0> # >*G?#&? +$>G '0 / 0L /# $ / $ $ / #*$ $'#'G / + '#'G$' 2@2F .' 6 '+$>?$' '& * /L '+$/ '#'$* '?' " #$L / ? ' +0 'G# ?? ?$ '$#/ ' # 'G# ?? & '?$/' 0 '$/= ?$' '0 '*# $ > & & / / 0> ! ⁄/ ' '9# # $' #0' J '&$-' ? 'Q# "* $'$+.' $& & L '##

; ' ' : ==

:'1:*E?-2&:5?(' '-' @2?' ?:21:5 C' -4' +5' 5JD5:-5F' -A2-' T'&G' 51F'&2&F(' @A5&' 2&' 2::'F5&-' A2F' D*-' A'E' '& D4??5??'4&' 46' -A5' 15?* -' 46' -A5?5' &5G4-'2-'4&?(' ?A4* F' @2'-' 641' 2' 641E2 ' F5: 2'02-'4&' 46' A4?-' '-'5?(' 2&F'-A*?' F5D1'$5' A'E?5 6' 46' -A5' 2F$2&-2G5' 46' 2&-':'D2-'&G'-A5' + 4@' 46' A'?' 5&5EC

A5' 1'GA-' 46' E2H'&G' @21' @4* F' ?55E' -4' '&: *F5' -A2-' 46' F'?D4?'&G' 46'-?' 61*'-?(' ?*+,5:-(' A4@5$51(' -4'-A4?5' D1'&:'D 5?' 46' &2-*12 ' 5M*'-C' @A':A' ?A4* F' 15G* 2-5' 5$51C' 2:-'4&(' @A5-A51' 46' 2' D*+ ':' 41' D1'$2-5' &2-*15 ' 4' D1'&:'D 5' :2&' +5' : 52151(' 641' 5J2ED 5(' -A2&' -A2-' -A5' D5&2 -C' ?A4* F' +5' D14D41-'4&5F' -4' -A5' 4665&:5 ' 4@' -A2-' '&6':-5F' 4&' -A5' ?4$515'G&?' 46' 2$2115(' @A':A' @5&-' ?4' 621' 2?' -4' F'?D4??5??' -A5E' 46' -A5'1' :14@&(' 2&F' 2&&'A' 2-5' -A5' D4 '-':2 ' 5J'?-5&:5' 46' -A5'1' H'&GF4E(' @2?' ?*:A' 2?' &4-A'&G' +*-' 5J-1241F'&21C' 2GB G15??'4&?' 4&' -A5' D21-' 46' -A5' :4&M*515F' &2-'4&(' 41' -A5' ?5 6.D15?51$2-'4&' 46' -A5' $':-41?(' :4* F',*?-'6C ' ?' &5'B -A51' 46'-A5?5':4&-'&G5&:'5?' 5J'?-5F'&' -A5' D15?5&-':2?5(' 51F'&2&F0?':4&F*:-' E*?-' +5' 15G21F5F' 2?' 2' 6 2G12&-' 5J2ED 5' 46' -A5' 2+*?5' 46' -A5' 1'GA-?' 46':4&M*5?- ' 5' A2$5' +55&' +*-'-44' 62E' '21(''&F55F(' @'-A' ?'E' 21' 2:-?' 46' D4 '-':2 ' '&,*?-':5(' 2&F' 4&' 2' E*:A' 21G51' ?:2 5(' '&' -A5' D15?5&-':'$' 'L5F' 2G5N' +*-(' 2 -A4*GA' -A5' &*E+51' 2&F' ?D 5&F4*1' 46' -A5' D15:5F5&-?' E2C' + *&-' 4*1' ?5&?'+' '-C' -4' -A5' 2-14:'-C' 46' -A5' 2:-(' -A5C' :2&' &5$51' :4&?-'-*-5' 2' 5G'-'E2-5' @2112&-' 641' '-?' D51D5-12-'4&

A' 5' -A*?' 6155 C' :4&F5E&'&G' 51F'&2&F0?':4&B F*:-' '&' -A'?' -12&?2:-'4&(' ' :2&&4-' G4' 2 4&G' @'-A' -A4?5' @A4(' A2$'&G' '&?D5:-5F' -A5' ?*+,5:-' 5??' E'.

=== b!

&*-5 C(215 F'?D4?5F -4 15G21F '- 2? -A5 15?* - 46 2 :44 (D15E5F'-2-5F D4 ':C 614E -A5 4*-?5- A5 D14D4?'-'4&? 41'G'&2 C E2F5 +C A'E -4 2$2115 2D D521 -4 A2$5 +55& :4&:5'$5F '& D5165:- G44F 62'-A A5 15M*'?'-'4& 46 -A5 641-15??5?('ED*F5&- 2? '- E2C ?55E(@2? &4-A'&G E415 -A2& A2F +55& +5641 5 E2F5 '& ?2+5 2?? -'E5(@A5& '- A2F +55&'G12&-5F(2&F -A5 ?5:*1'-C ?*+?5M*5&- C 15?-415F(2? ?44& 2? -A5 5E51 G5&:C A2F D2??5F 2@2C 9 A5 2 -51&2-'$5 D14D4?5F(46 5&-51'&G '&-4 -A5 4 C 52G*5(D15?5&-5F E2&C D4'&-? 46 $'5@ ?4 62$4*12+ 5 -4 2$2115(-A2- 51F'B &2&F('G&412&- 2? A5 -A5& @2? 46 -A5 D15:'?5 644-B '&G 4& @A':A ?A5 ?-44F @'-A 12&:5(E'GA- A2$5 ?55& &4 'ED14+2+' '-C '& A51 : 4?'&G @'-A '- 2F 5'-A51 2 -51&2-'$5 +55& 5E+12:5F(-A515 @4* F A2$5 +55& &4 D15-5J- 641 -A5 '&$2?'4& $5& @A5D A4?B -' '-'5? A2F +55& D15:'D'-2-5F +C -A5 'ED4 '-':4&F*:- 46 2$2115(51F'&2&F/-4 ,*FG5 &4- 614E A'? D*+ ':' E2&'65?-45? 4& C(+*- 614E A'? D1'$2-5 :4115?D4&FB 5&:57 @4* F ?55E -4 A2$5 2- 6'1?- :4&-5ED 2-5F A4 FB '&G -A5 :4*&-1C 4& C -' -A5 : 4?5 46 A'? 15&:A 5JB D5F'-'4& %6 +*- -A5 62:' '-C 46 15-2'&'&G -A5?5 :4&B M*5?-?(@A5& 4&:5 2:M*'15F(@2? -44 ?-14&G 2 -5ED-B 2-'4& - @2? 52?C -4 6'&F ?4E5 D 2*?'+ 5 D15-5J- -4 ,*?-'6C '-(2&F 4+-2'& ?*:A 2 ?2&:-'4& 614E -A5 A'GA5?- 2*-A41'-C 2? ?4* F $5' -A5 '&,*?-':5 46 -A5

I $ / $'$ P >FE ?$ /?# +$ #= +:' #0 HHH:' &$-'#'### A * P >4E ?'2@2F$-' = 8$ #0$>' +'###' #0'JJ#J'&$-' $ / K' '&$-'&&JJJ' A = J###' 0# # # $'' #0'#'&$- ' 'Q# "' /# $ /0' = '##

b ! ==

-12&?2:-'4&614E -A5@41F(> 2&F614E A'? 4@& 5C5?
&F -A2- -A5?5@515 + '&F5F'? +*-44-1*5(' '6(' 2? 2&
12G4&5?5 A'?-41'2& F5: 215?(A5 :4* F 15E21H 4& A'?
F52-A+5F I -A2-(' '&F5D5&F5&- C 46 -A5 :4&M*5?- A2$B
'&G +55& *&F51-2H5& 2- -A5 '&?-2&:5 46 -A5 ?4$515'G&
D4&-'66(' 641 -A5 5J-'1D2-'4& 46 -A5 ?:A'?E(' A5 65 - A'?
:4&?:'5&:5 2? 52?C '& H55D'&G '-(' 2?''& H55D'&G A'?
:14@& 46 12G4& K9

1 0$ &$ + ## >JJJ '&$- 'JJ#

'?$' '+$/ ' * ? $? # # ' J& #' >'/ ' / ' $L
'$ ' # ' ? ' - ' 6# > ' 2 ' U ' (6# # ' / ' $'$ '-$ '
' / ' & $# ' - ' / ' $ ' $# 0V ' $ # ' 2@5B ' 3 ' '
?# '$ >+ 'G D '* +' ?' - ' *' ' *' 6 >' # $ ' & L
$ # ' # ' # ' ?$ ' $' + $" ' & + -# $ # ' *'*$& ' $ /' ? '
/ - >'& /' 0>' ? ' $ # $' - ! /#& ' *' ? ' G # ' ' / L
#' ' + ' '$ ' * +' ?# ' &# & + $ & '? G ' '# ' ? '& $ '
' $** / ' ' ? ' -$ # ?' ' # ' *' ? ' $+ ' $ $& # ' F ' '
$& ' # /' ' 0 ' $'$ # # #0 # / <' ## ## =
0 # # R' '& ' ' ' ?$ ' ?# >' -$" ' * ? ' $ /' # ' &?# * >'
&& -# /' $ ' ? ' # '#+ - 'G# ?' ? ' + # # $ >' ' ' *' ? '& L
, '0>' ? ' D ' *' '$ ' 'G$ ' #"# $ >'# & - $ /' # ' ? '
' + '& $# # "'# ' $ /'$? (' ' # ' ' $? '-$ $-? $ '
' "$ (' ? #& 'G# ?' + ' ? ' +$ <' $ /'# '$-- $ /'
* +' ?' - ' *' ? '> " ' 0 #!$' 0W $- /' # & > $+' 8 $ $='
$+ '2@(@V' 4' ' ? '" $ 'G D'# $ # "' ? '?# >' *' $L
'$ '# ' ? 'R' $ '/ ' > ' *'G?#&?' ? '0 ' /# # '# ' ?$ '
+' ' '' + '* # '* +' ? ' - ' *' 0$ K' $+ - $ '2)BB '
' >- " $-?#&$' J & # ' G /' 0 ' & /# $0 ' '$ >'& >'
? ' ? ' *# ' ' + ' G ' G # ' 0>' ' G? ' - * /'
$&, $+ $ & 'G# ?' ? ' $ #, # # ' *'?# ' $ # ' ?$ ' +$/ '?# '0 D'
/# - $0 ' ' ? ' / ' *' ?# ' - # ' *' # ' ?# >' ? '
* ?' $ /'*#* ?' $ ' ? ' & # $ # ' *' ?# ' G D' 0>' $ &# & '/

== b !

==

Z Z

6 8 : : =

6 = 6 6

< < > < <

4 -A5 G44F 41F51 @A':A T'&G 51F'&2&F E2'&-2'&5F '& 2?-' 5 +C A'? 5&51G5-':
:4&F*:-(2? @5 2? +C A'? D4 ':C 46 F'$51-'&G -A5 5666 51$5?:'&G ?D'1'-? 46 -A5 &2-'4& -4 6415'G& 5&-51B D1'?5(A5 ?-' 5JD51'5&:5F 2&&4C2&:5 614E $21'4*?
:2*?5? E4&G -A5?5 @515 2J'E''2&0? D15-5&B ?'4&? -4 -A5 15G5&:C(2? D2-51&2 G12&F62-A51 46 -A5 A5'1 2DD215&- A5 5ED5141('&F55F(A2F E415 -A2& 4&:5 -A152-5&5F -4 2??51- A'? D15D4?-514*?
:2'E? -4 2?-' 5 '& D51?4& N 2&F 2 -A4*GA -A'? b*'JB 4-':E4&21:A(@A4 A2F +55& -' -'&G 2G2'&?- @'&FB E' ? 2 A'? '65(62' 5F -4 5J:'-5 2&C D4@516* ?5&B ?2-'4&(5'-A51 +,A'? -A152-? 41 A'? D14E'?5?('-6*1B &'?A5F 2 D 2*?'+ 5 D15-5J- 641 H55D'&G 2 '$5 2 62:B -'4& A4?-' 5 -4 -A5 '&-515?-? 46 -A5 2-A4 ':H'&G

& -A5 @'&-51 46 < 2& 2112&G5E5&- @2? E2F5 @'-A -A5 5ED5141(-A14*GA -A5 E5F'2-'4& 46 4*'? -A5 @5 6-A(+$ @A':A A5 6'&2 $ 15 '&2*'?A5F A'?

==S 6 6

D15-5&?'4&? -4 -A5 15G5&:C 46 2?-' 5('& :4&?'F51B 2-'4& 46 -A5 2'F 46 -A155 A*&F15F 2&:5?(2&F -A5 -12&?651 -4 A'E 46 -A5 6'6-C -A4*?2&F F*:2-? @A':A 51F'&2&F @2? -4 15:5'$5 614E '?2 9 4 +1'+5 @2? -44 D2 -1C 641 2 D1'&:5 @A4?5 E52&? @515 2? &2114@ 2? A'? D14,5:-? @515 $2?- 2&F :A'E51':2 $5& 26-51 -A'? D2:'6':2-'4&(-A5 *?-1'2& D21-C :4&B -1'$5F -4 F'?M*'5- -A5 H'&G(+C E2'&-2'&'&G -A5 1:AF*H5 A21 5?0? D15-5&?'4&? -4 -A5 G4$51&E5&- '& -A5 &2E5 46 A'? *&641-*&2-5 E4-A51N *&-' (2- 5&G-A(-A5 D2&'?A E4&21:A :2E5 -4 5&-51-2'& &4- E515 C F'?-1*?-(+*- D4?'-'$5 2$51?'4& 641 A'? G12&FB ?4& N @A' 5 -A5 2--51(2? A5 2F$2&:5F '& C521?(@2? -2*GA- -4 15G21F 51F'&2&F 2? 4&5 @A4 5J: *F5F A'E 614E A'? 1'GA-6* ' '&A51'-2&:5 +C 2 E4?- 6 2G12&- 2:- 46 *?*1D2-'4& "P"

51F'&2&F0? ?*?D':'4*?-5ED51 64*&F 4-A51 G14*&F? 641 *&52?'&5??(@A515 -A515 @2? 5?? @2112&- 641 '-('& A'? ,52 4*?C 46 A'? ' *?-1'4*? ?*+,5:- 4&?2 $4 F5 41F4$2 A'? @2? D21-':* 21 C -A5 :2?5 @A5& :'1:*E?-2&:5? A2F F'?: 4?5F -A5 6* ' 5J-5&- F6 -A2- G5&512 0? D4D* 21'-C 6-51 -A5 F5652- 46 2$5&&2(-A5 D4D5 2&F -A5 4-A51 2 '5? 46 51F'&2&F *1G5F A'E '& -A5 E4?- 521&5?- E2&&51 -4 ?5&F -A5 152- 2D-2'& '&-4(-2 C(2? -A5 4& C E2& :2D2+ 5 46 :A5:H'&G -A5 15&:A 21E?(2&F 15?-41'&G -A5 641B -*&5? 46 -A5 52G*5 A5 H'&G(-15E+ '&G 641 -A5

TdS

I' $ #$ $' 6# ' / ' -$ $' ' 9 # $' $ ' +' '#' +' ## ' #0 ' JJ#J ' &$-' JJ# A ' #0 ' J ' &$-' ' ' J#J 'A ' ' 9 # $' $ ' +' '#' #0 '###' $ > ' - ' -# ' -# ' &$-' J ' ' J '##' JJJ#

'E E5F'2-5 ?265-C 46 A'?' 4@&' F4E'&'4&?(G2$5 2 15B
*:-2&-' 2??5&-(2&F 41F515F 4&?2 $4 -4 A4 F A'EB
?5 6'&' 152F'&5??' -4 -2H5 :4E E2&F 46 2&' 21EC -4 +5
'&?-2&- C 12'?5F 641 -2 C 9

A5?5 '-'F'&G?' @515 15:5'$5F @'-A 5&-A*?'2?E +C
-A5 2?-' '2&?' 5&' 46 5$51C 12&H D15??5F 641@21F
-4 ?51$5 *&F51 2 :A'56 @A4?5 ?51$':5 @2?' '-?5 6
?*6 :'5&-' D2??D41-' -4 62E5' I' -' 2:-*2 C ?55E5F(K
?2C?' 21-C1(R'2?'6' D2'&' @515 -4 +5 F12'&5F 46 2
A51 &4+ 5 2&F G5&514*?' + 44F' 4-A'&G 2DD5215F
'ED4??'+ 5(41 5$5&' F'66':* -(*&F51 ?*:A 2 52F51
2 C 2 :2$2 '51 '& -A5 2&F +*-' @4* F A2$5
-A4*GA-' '-' 2 15D142:A -4 15E2'& +5A'&F' 1* C
E21$5 4*?(K A5 2FF?(R'?' -A5 2*-A41'-C @A':A A5
A2?' 2:M*'15F 4$51 2 ' 41F51?' 46 E5&PK "7"

*:A @2?' -A5 L52 '@'-A @A':A E5& 5& '?-5F *&B
F51 A'?' +2&&51(-A2-' G152-' F'66':* -C @2?' 64*&F '&
:4ED 5-'&G -A5 &5:5??21C 5$'5?' 641 2$2115(-A5&
E5&2:5F +C -A5 15&:A' A5 H'&G(2 21E5F 2-'
-A'?(2&F 15 '5$5F 614E' 2DD15A5&?'4&?' 46 'E E5F'2-5
F2&G51 -4 2D 5?(+C ?*+?5M*5&-' 2F$':5?' 614E' -A2-'
:4*&-1C(?5&-' 41F51?' G152- C 15F*:'&G -A5 &*E+51
46 641:5?' -4 +5 12'?5F' *-' -A'?' A2F '-- 5 5665:-(
?'&:5 5$51C E2&(@A4 A2F -A5 E52&?(D1565115F 2:-B
'&G 2?' 2 $4 *&-551 *&F51 -A5 152-' 2D-2'& -4 2&C
4-A51 ?51$':5(A4@5$51 G2'&6* N 2&F E2&C 2 D441
:2$2 '51 @2?' -A515 @A4 5JD5&F5F A'?' '-- 5 2 (41

9 5-51 21-C1(D*? D'?-' &$-' '' > '4$'4('-2 $" #
5D'?-' :::: JJJ$' > A14&':2 F5 4&?2 $'('+' '''' - 'F33
12& 2D'-2&('+' ''' :2D' $''
> V*1'-2(&2 5?(-4E' $'' '+' J -' D*? D'?-' 5D' :::: JJJ$''
:

'&:*115F 2 6552$C F5+-('& 41F51 -4 2DD521 '& -A5 6'5 F '& 2 ?-C 5 +5:4E'&G -A5 :A'$2 1C 46 D2'&

51F'&2&F0? 641E51 F'?-1*?- 46 A'? G5&512 @2? &4@ 2*GE5&-5F -5&64 F +C -A'? 5$'F5&:5 46 A'? *&B +4*&F5F D4D* 21'-C 5 ?2@ '& 'E2G'&2-'4& E*:A E415 F2&G51 -4 2D 5? 614E ?*:A 2 ?*+,5:- -A2& 614E 2&C 5&5EC(A4@5$51 641E'F2+ 5% A5 A2F 15B :5'$5F '&-5 'G5&:5(E4154$51(-A2- -A5 15&:A @515 '& 6* 15-152- -4@21F? -A5 &41-A 5 A5?'-2-5F &4 4&G51(+*- ?5&- '&?-1*:-'4&? -4 -A5 152- 2D-2'& 2- 41F4$2(-4 F'?+2&F A'? 5$'5?(2? -A5 5JD5F'-'4& @4* F +5 D4?-D4&5F -' 26-51 -A5 D15?5&- @'&-51 0 2- -A5 ?2E5 -'E5 '&$'-'&G ?*:A 2? :A4?5 -4 5& '?- '& -A5 ?51$':5 46 2$2115 9

A5?5 -'F'&G? @515 15:5'$5F @'-A '&F'G&2&- 655B '&G? +C -A5 @A4 5 21EC A5 466':51? 156*?5F(&521 C -4 2 E2&(-4 5&G2G5 '& -A5 D14D4?5F ?51U $':5 4&?2 $4(@A4 *&F51?-44F -A5 E4-'$5? 46 -A'? :A2&G5 '& -A5 14C2 D*1D4?5(@2? F55D C ?5&?'B + 5 -4 @A2- A5 15G21F5F 2? 2 D51?4&2 2664 4&-% A5(A4@5$51(5&,4'&5F 4& A'? -144D? 'ED ':'- 4+5F'5&:5 -4 -A5 H'&G0? :4EE2&F? 5641 5 F'?E'??'&G -A5E(2? A5 H&5@ -A2- E2&C A2F +55& F12@& '&-4 5JD5&B ?'$5 D15D212-'4&? 621 +5C4&F -A5'1 E52&?(A5 F'?B -1'+*-5F 21G5??5? 2E4&G -A5E(2E4*&-'&G -4 -A5 'EE5&?5 ?*E('6 @5 E2C :15F'- A'? +'4G12DA51?(46 4&5 A*&F15F -A4*?2&F F*:2-? R 5$51 ?-'&- C4*1 A2&F(K ?2'F A5 -4 A'? ?-5@21F(@A4 15E4&?-12-5F 4&

I 8# '# : # $ $" # 8 = '## '### A $: # $ /# $ $ '# #0 ###'-'F35 A ? #&$: * 43 A $ > / 8 $ $-# $ #0 ### &$- - -# -# &&&&J&'###

-A5' E2G&'-*F5' 46' -A5' F4&2-'$5'M R'-A515''?&4' E4F5' 46' 5&,4C'&G' 4&50?D14D51-C(' 'H5' G'$'&G' '-' 2@2C K' 5' -A5&' @14-5' 2' 5--51' -4' -A5' H'&G(' '&' @A':A' A5' G2$5' 6155' $5&-' -4' A'?' '&F'G&2-'4&(' +'--51 C':4ED 2'&B '&G' 46' -A5' *&G5&514*?' 15M*'-2' 46' A'?(?51$':5?(' 2&F' 2?H'&G' 52$5' -4' 15-'15' -4' A'?' F*:AC' 46' 5112&4$2' '& 2D 5?(' ?'&:5' A5' :4* F' +5' &4' 4&G51' *?56*' '&' D2'&' A'?' 15M*5?-'@2?' &4-':2 :* 2-5F' -4' * ' 51F'&2&F0?? ?*?D':'4&?M A5' 2&?@515F(' A4@5$51(' R'' '&' -A5' ?46-' 2&F' D 52?2&-' ?-C 5' @A':A' A5' H&5@' ?4' @5 ' A4@' -4' 2??*E5(K' ?2C?'V*1'-2'M 2&F(' 26-51' ?D5:'6C'&G' A'?' E4B -'$5?' 641' 15 '&M*'?A'&G(' A4@5$51' 15 *:-2&-C(' -A5' 5JD5F'-'4&(' A5' 15:4EE5&F5F' 4&?2 $40?15-*1&' -4' 4,2(' 2-' 52?-' *&-''?4E5' E415' F56'&'-5' 2112&G5E5&-' :4* F' +5' E2F5' 15?D5:-'&G' -A5' 2662'1?' 46' -2 C

A*?' :4&F5E&5F' -4' A'?' 641E51' ?5: *?'4&(' -A5' 152-' 2D-2'&' 15?*E5F' A'?' 2-5' A2+'-?' 46' '65(6155 C' 4D5&'&G' A'?' E2&?'4&' -4' D51?4&?' 46' E51'-(' '&-515?-'&G' A'E?5 6' '&' D 2&?' 641' 2E5 '412-'&G' -A5' :4&F'-'4&' 46' A'?' -5&2&-1C' 2&F' &5'GA+4*1?(' 2&F' '&' -A'?' M*'5-' @2C' @'&&'&G' 2' E415' *&M*5?-'4&2+ 5' -'- 5' -4' A*E2&' G12-'B -*F5' -A2&' @A5&' D' '&G' *D' -A5' + 44F.?-2'&5F' -14DA'5?' 46' $':-41C' 2?' 641' A*E2&'-C(' -A2-' '-' ?A4* F' A2$5' F55E5F' 4-A51@'?5?9

&4-A51' :'1:*E?-2&:5(' @A':A' F'?M*'5-5F' -A5' 2B -A4 ':' H'&G(' @2?' -A5' 62' *15' 46' '??*5' +C' A'?' D15?5&-

I' $ #$ $' 6# '/' -$ $' '#' #O' H' &$-' JJ'### A ; # L +' ## #O' JJJ' &$-' J#' A' $ $' -$ ' 0 ' +' 8# '# ':# ' :# +' #' --' 4F3' A'44F' A 0$#0&$' --' F5E' F52 A ? #&$' / ' > ' /' $" ' +' ## >' 8 $ ' $-# $ ' #O' ###' &$-' '## JJJ' &$-' HH '###' #J A 9 # $' $ ' +

' ' G

= ;

@'65 A5 &2-*12 F5?'15 46 466?D1'&G @2? 6*1-A51 ?-'E* 2-5F +C A2-15F 46-A5 A4*?5 46 *?-1'2(@A':A &2F5 A'E 52G51 -4 2+1'FG5 -A5 2ED 5 '&A51'-2&:5 2+4*- -4 F5?:5&F 4& A'? G12&F?4& A21 5? - E*?- +5 :4&65??5F(-A2- '- 156 5:-? '-- 5 :15F'- 4& A'? A521- 41 A'? *&F51?-2&F'&G(-A2- A5 ?A4* F A2$5 +55& ?4 152FC -4 ?2:1'6':5 -4 D51?4&2 15?5&-E5&- -A4?5 &4+ 5 D 2&? 641 -A5 :4&?4 'F2-'4& 46 -A5 E4&21:AC(@A':A A2F ?4 @41-A' C 4::*D'5F -A5 2--5&-'4& +4-A 46 A'EB ?5 6 2&F 46 ?2+5 2 '& A'? 521 C '65 '? @'?A5? A2F &521 C +55& 152 'L5F b*55& 51E2'&5 @2? F5 '$515F 46 2 ?4&(21:A 1F(< 14$'F5&:5(A4@5$51(2? '6*&@' '&G -4 F5652- -A5 G 41'4*? :4&B ?*EE2-'4& 46 -A5 *&'4& 46 -A5 D2&'?A H'&GF4E?(?4 4&G F5?'15F 2&F &521 C 2:A'5$5F(D51E'--5F -A5 '&62&- -4 '$5 4& C 2 65@ A4*1?9

51F'&2&F 15D'&5F 2- -A5 +5??'&G F5&'5F A'E(&4@ E415 -A2& 5$51 & 41F51 -4 '&$'G412-5 A'? :4&?-'-*-'4&(A5 15?41-5F -4 21-'6':'2 E52&? 6 A5 E5F':'&5? @A':A A5 -44H A2F -A5 4DD4?'-5(5665:-M 2- 52?- 614E -A'? -'E5(-A5 ?D1'&G 46 U'(A5 @2? 266 ':-5F @'-A '&6'1E'-'5? +56415 *&H&4@& -4 A'E &?-52F 46 A'? A2+'-*2 5M*2&'E'-C 2&F :A5516* &5??(A5 +5:2E5 'ED2-'5&-('11'-2+ 5(2&F 615M*5&- C 2 D15C -4 E41+'F E5 2&:A4 C 5 4?- 2 15 '?A 641 +*?'&5??(2&F 5$5& 641 2E*?5E5&-?(5J:5D- 6'5 F

I $ 0$!$ $ $*# >_ A G? # + &? - &# 2@E5 A 9 # $ $ + '# # / / * -$" A $ #0 H &$- ' $' # / 0 *' ? *$& ? > $ / $# /' G# ?' - -# -# JJJ# $ &? & # 6 - &# # 0> $ L

?D41-?(-4' @A':A' 5' F5$4-5F' -A5' G152-51' D21-' 46'A'?'
-'E5' A5' 65$51' @A':A' :4&?*E5F' A'E' E2F5' A'E'
'ED2-'5&-' 46' 4&G' 15?'F5&:5' '& 2&C' 4&5' D 2:5('[2&F'
F*1'&G' -A5?5' 2?-' C521?' 46' A'?' '65' -A5' :4*1-' @2?' '&
D51D5-*2' E'G12-'4&' A5' *&A2DDC' E4&21:A(' 2 2?'
:4* F' &4-'6 C' 614E' F'?52?5(' 41' 614E' A'E?5 6 9

&' -A5' ?*E E51' 46' < < (' A5' @2?' 64*&F' 4&5' &'GA-'
+C' A'?' 2--5&F2&-?' '&' 2' ?-2-5' 46' '&?5&?'+' '-C(' 614E'
@A':A' '-' @2?' F'66':* -' -4' 14*?5' A'E' 5' 5JA'+'-5F'
6 2?A5?' 46' A'?' 641E51' 5&51GC' 26-51' -A'?(' A4@5$51'
&' 4&5' 4::2?'4&' A5' E2F5' 2' ,4*1&5C'-4' 12G4&(' '&
41F51' -4' D15?'F5' 2-' -A5' F5 '+512-'4&?' 46' -A5' :41-5?(
2&F' 5&641:5' -A5' G12&-' 46' ?*DD '5?(' -4' @A':A' -A5'
&4+ 5?(' 614E' ?5 6'?A' :4&?'F512-'4&?(' E2F5' 15?'?-2&:5'
A5' H'&G' 62' 5F(' '&F55F(' -4' +5&F' -A5'1' '&-12:-2+ 5'
-5ED51?(' +*-' A5' F'?D 2C5F' 4&' -A5' 4::2?'4&' 2' A'?'
@4&-5F' 2FF15??' 2&F' 15?4 *-'4& 9PK

&' A'?' 15-*1&' -4' 2?-' 5(' @A':A(' D51A2D?' 614E' -A5'
G152-51' 156'&5E5&-' 2&F' F56515&:5' 46' -A5' D54D 5(
?55E?' -4' A2$5' +55&' 2 @2C?' 2' E415' 2G1552+ 5' 15?'B
F5&:5' -4' A'E' -A2&' A'?' 4@&'H'&GF4E' 46' 12G4&(' A5

1' $ 0$!$ ' $ ' ' $ ' & / +' $+, '$"#' ' J$='
2@24' ' ,'A' ' $ + ' " #+ +' $ + ' f#J ' , $+'
$' + $0 ' * ' 233 A' ' $ ' , $+' $0#"#<' '
8 + K' ' 6 0 ' 8 # ' * ' ' $ '& #, ' '#' /#& -#/#='
2(B A $ / '$ '6# '/ ' + -' $ ' , **#'# # +'# ' > '# '/ # '
$ ' : ' +'#' -' F) $' , $+' # ' ! ' # #' $ '
%' '#/ +' '' V' $>' &# $' $ +'*$' V' - '
' $ >' *' ? ' D# "' # '$' -# ' -# ' JJ#J
' /$ /'# ' & 0 ' 2@24' ' 9 # $' $ ' +' '#'
U ' $/ +' *$& $' # ' $ /#=' #0' H' &$-' J&###' J&#' A $ 0$L
/ ' ' $/ +' # $ ' #$' !$ ' $ ' ' $ '2@2@' A '
' # #' ' - # ' +$' ' $ > ' - ' -# ' -# '
'# ' -- # $' # #' $ & 5

= =

15:5'$5F '&-5 'G5&:5 $51C $5J2-'4F?('& -A5 '11'-2+ 5 ?-2-5 46 A'?' E'&F 5 521&5F -A2- -A5 152- 2DB -2'& @2?' D15D21'&G -4 5E+21H 641 2&F51?(@'-A A'?' 61'5&F -A5 4*&- 46 !15&2(-A5 21M*'?' 46 1'5G4 A'?' &5DA5@(2&F A'?' 6*-*15 ?4&.'&. 2@(-A5 4*&- 46 2+12 4E5 ?*1E'?5F -A2- 4&?2 $4 F5?'G&5F -4 -2H5 :4E E2&F 46 -A5 D2D2 21E C '& -2 C N 4-A51?(-4 ,4'& A'E?5 6 @'-A -A5 1:AF*H5 A21 5?(2&F '&B -14F*:5 A'E('6 D4??'+ 5('&-4 2?-' 5 51F'&2&F(: '&G'&G -4 D4@51 E415 -5&2:'4*? C 2? '- @2?' 152FC -4 ? 'D 46 '-?5 6 614E A'?' G12?D(A2F '-- 5 F4*+- -A2- -A5 2--51 @2?' A'?' D*1D4?5 5 ?5&- 41F51? -A515B 6415 -4 -A5 ?4*-A(-4 D15$5&- -A5 E5F'-2-5F 5E+21HB 2-'4&(2&F('6 &5:5??21C(-4 ?5'L5 4&?2 $40? D51?4& *- -A5 2--51 @2?' ?44& -4 5E+21H 4& 2 $4C2G5 @A515 &4 521-A C 21E :4* F 2115?- A'E 9

& -A5 2*-*E& 46 < < A5 @2?' 2--2:H5F +C 2 M*21-2& 65$51 -?' 2DD142:A5?' 2- 6'1?- @515 E'F '?' :4&?-'-*-'4&(&2-*12 C G44F(A2F +55& '&$'G41B 2-5F +C -A5 ?5$515 -12'&'&G 46 2 E''-21C '65N 2&F A5 A2F +55& ?4 641-*&2-5(-A2-(&4-@'-A?-2&F'&G -A5 6155 5JD4?*15 46 A'?' D51?4& -4 F2&G51(A5 A2F &5$51 15:5'$5F 2 @4*&F N +*-(2 -A4*GA '-- 5 2 21E @2?' 4::2?'4&5F 2- 6'1?- +C A'?' ' &5??(A5 64*&F '- 'ED4?B ?'+ 5 -4 -A14@ '- 466N 2&F A5 15E4$5F -4 A'?' 15?'B F5&:5 '& 12&2F2('& A4D5?' 46 F51'$'&G +5&56'- 614E '-?' ?2 *+1'4*?' : 'E2-5 $51C 5661- -4 12 C -A5 F5.

IN9 # $ $ + '# &$- JJ### A 8# '# :#& #0 &$- J&'# A 0$ &$ > :# + - F5F / $" + ## > JJJ

F'&'&G D4@51? 46 &2-*15 D14$5F *&2$2' '&G 2&F(4& -A5 ;&F 46 5:5E+51 < < (A5 5JD'15F '& A'? 4@& D2 2:5 2- 12&2F2('& -A5 21E? 46A'? @'65 2&F A'? +5 4$5F F2*GA-51 $'12 9

A5 F52-A 46-A'? ' *?-1'4*? E2& F'66*?5F *&'$51B ?2 ?4114@ -A14*GA4*- -A5 &2-'4& 5&$C 2&F *&@41-AC ?*?D':'4& F'5F @'-A A'E A5 H'&G 2&F -A5 @A4 5 :4*1- @5&- '&-4 E4*1&'&G *&512 ?51$':5? @515 D51641E5F '& A'? A4&4*1('& -A5 14C2 :A2D5 2&F 2 -A5 D1'&:'D2 :A*1:A5? 46 -A5 H'&GB F4E(6 51F'&2&F 2FF15??5F 2 5--51 46 :4&?4 2B -'4& -4 A'? F*:A5??('& @A':A A5 2E5&-5F -A5 F52-A 46 4&5 $$ @A4 A2F 15&F515F A'E '&5?-'E2+ 5 ?51B $':5?(2&F -4 @A4E A5 A2F 5$51 +41&5 ?*:A ?'&:515 2665:-'4& PK m,N '? 4+?5M*'5? @515 :5 5+12-5F @'-A G152- E2G&'6':5&:5 '& -A5 2&:'5&- 441'?A :2D'-2 (*&F51 -A5 ?*D51'&-5&F5&:5 46 -A5 4*&- 46 5&.' F' 2(-A5 ?4& 2&F ?*::5??41 46 4&?2 $40? 4 F 61'5&F(-A5 2-5 G4$51&41 46 12&2F2 U '? 15E2'&?(6'1?- F5D4?'-5F '& -A5 12&:'?:2&U E4&2?-51C(@515 26-51.

' 8# '# ' :# **# ' :# =
+ ' --' F)2 ' F5F A ? #&$
/ ' 8 $ ' $-# $ ' #0 ' ###' &$-
#J A ' $ > ' - ' -# '
-# ' 6 ' A $#0$!$ ' $ '
' $*# ' 2@2@ A 8$ #0$> ' +=
- /# ' + ' ## ' #0 ' JJ ' &$-'
JJ###
1 : > $' $' 0 ' & +L
- V' $> ' $ + ' / # >'
R', ' *# ' & ' >' /# $ /.' $'
& ' " $ /' &$-# $# ' $', #' #' =
' $ ' 0 #" ' P '& >' & '
, ' # & '" $ / ' ? ' + =
$# ' ' * $# ' >'

0 $ & -'& ' ', C# ' ' >'
' *$ ' *$# ' ?' ' - - '
& ' '/ - '& + + ' ?' & J'
/ '- - ' ' C>' ' -$ ' & L
+ + ' & ' & ' $ '# ' #'
$'$ V' ' ' + ' # ' - ')3
*' ' $' & ->' *' ? ' #"# $'
' # ' ? ' ? #&$' / ' 8 $ '
$-# $ ' * ' 2B (.' '# '/$ /'
P$ '4 /'2@2B >' ? 'G D'
0 * ' /# $ /C '/ $?
a' ' $ > ' #& ' ? '
/ $?' *' ?# ' #+$0 ' 0 L
+$ ' * ' *' > $ ' $ /' *' ? L
' # ' $' ' /$ /' P >

=

@21F?15E4$5F(2&F 2'F +5&52-A 2?*ED-*4*?E2*B ?4 5*E '& -A5:A*1:A46 2& 514&'E4M 2&F E415 -A2&2A*&F15F +2&&51? 2&F 14C2D5&&4&?(@2$'&G '& E5 2&:A4 C D4ED 214*&F-A5@2 ? 46-A5 :A2D5(D14: 2'E5F -A5 G 41'4*? 2:A'5$5E5&-? 46-A5@211'41 @A4 ? 5D- +5&52-A 9 '? &4+ 5@'65(4&2 21'2 2&1'M*5(?*1$'$5F A'E +*-2 65@ F2C? '? F2*GA-51 $'12 '&A51'-5F -A5 D1'&:5 C -'- 5? 2&F 5?B -2-5? 46 A51 62-A51(@A':A(+C A51 E211'2G5 @'-A A51 H'&?E2&(-A5 4*&- 46 2+12(@515 D51D5-*B 2-5F '& -A5 A4*?5 46 41F4$2 6

23 ? 2@2@ '#'$// /' - &# "' ? +'# '?# '$&& '*' /# $ ' $ /'0 $? ' ? ' ? - &? ' / K' #=' & $ # ' * G# "' * +' ? ' " /$/' / ' 8 $ $/$'* '22(A ' +#/'$ /' -?# -?#&$' -#&#' *' + $ ' #& '/' -$" ' # '$+#$0 '$? ' ? '& ' +'###' -'@E@ G$'+$/' $, #' *' / !$' *' ? #&$'/ '8 $ ' $-#$ ' 0>' /# $ /'$' ? ' #+ '0 #0'###'&$-'#J'A'8# '# ' :#$' * '?#'/ $?' 6#''$ # ' #L ':# +'* 'F5F '$/ /'/#" ## '# & /# "' ? ' 8 $ '' G$'& $ /' D ' " ' + ' *' 8 $ $/$' / $ '$'$'$ /' $'$ /' & / /' '?#' / ' ' ' $, #' *' # '$'#' $ >' # ' $ >'- -#<'?#' G#?' $ ' *' ? ' '$ ' *' " # ' G$'# ? # /' #' * ' (EEEE'/ &$ ' 6 'G$' + $ '0>' $' > " ' ? ' $ '8 $ /' $0 ' *' $- ' *$+ ' # " '6 $/'/' $ /'$'0 +$' *': #& '6#' / K$ - # & >' ? ' G ' $ $ + # /'0>' $' '#$' '? ' '8 K$ '6 $ /K'/' $'$'G? '*# /' ?'- ' $'$"# ':#$""# '* 'F(/ '$'G?2 '*# /' ?'- ' $? ' -' *' ? '+ + ' / ' ?$ ':' *'8 ' ' *' G$' ' ? ' +$ 0 ' **#">' *' #$ '$ '$ /' $- ?'8 $' $- $# '$ + /'$ /' $>' / ' ?#-' ' ?#' D # "' ? ' 0$ ' $ /' / & /$ ' G ' $# /' ' $' ? ' +##$ >' -?# 'G?#&?' -$ #?' / D / +'G#?' ?'# ' & # /' '"$ #?' ?'G$ ' -' D ' *' $ $' ' $-' *' ? '&?$- ' $&& /# "' ' =' # $ ' $' + $0 ' *' / K' $' $ '$'2BEE'?$/'/#L F(A $' :#$'/#' $ ' :I' $-- $ /'0 * ' ? ' #"? ?' * ' (2A $$K$'/'' / K$' & ><' $' $ 'G '+$>'#* ' #" #/$/ '-'4E) ' * +' + $(' # & 'L

4&?2 $4(41(2? A5 '? :2 5F '& 2?-' '2&(4&L2 4 9F5 51&2&F5L F5 41F4$2(@2? ?'J-C.-@4 C521? 4 F 2- -A5 -'E5 46 A'? F52-A '? :4*&-5&2&:5 2&F D51B ?4& 215 15D15?5&-5F -4 A2$5 +55& 5J-15E5 C A2&FB ?4E5 A'? E2&&51?(5 5G2&- 2&F 2--12:-'$5(@515 ?-2ED5F @'-A -A2- 46-C F'G&'-C @A':A ?4 46-5& F'?B -'&G*'?A5? A'? :4*&-1CE5& 5 ?-' +521?(K ?2C? 21-C1(?D52H'&G 46 A'E '& -A5 2?- C521? 46 A'? '65(R -A5 ?2E5 E2,5?-':D41- 2? @A5& '& -A5 A5'GA- 46 A'? 641E51 2*-A41'-C ?4 -A2- 5$51C 4&5 @A4 $'?'-? A'E 2:H&4@ 5FG5? -A5 '&6 *5&:5 46 A'? &4+ 5 D15B ?5&:5(2? 6* C 2? @A5&(2- -A5 A52F 46 21E'5?(A5 G2$5 2@? -4 -2 C K9

'? ?D 5&F'F E' '-21C ?*::5??5?(" ?4 G12-'6C'&G -4 2?-' '2& D1'F5(A2$5 E2F5 -A5 &2E5 46 4&?2 $4 2? 62E' '21 -4 A'? :4*&-1CE5& 2? -A2- 46 -A5 'F(@A':A(6 42-'&G F4@& -A5 ?-152E 46 D4D* 21 E5 4FC(A2? +55& -152?*15F *D 2? 2 D21- 46 -A5 &2-'4&2 A'?-41C '? ?A'&'&G M*2 '-'5?(5$5& E415 -A2& A'? 5JD 4'-?(A2$5 +55& 46-5& E2F5 -A5 -A5E5 46 6':-'4&M 2&F 6':-'4&(2? *?*2 (A2? F52 - @'-A -A5E '& 2 62?A'4& -4 52$5 4& C :4&6*?5F 2&F 5114&54*? :4&B :5D-'4&? 46 +4-A 415 '? H&4@& 46 -A5 D2&'?A A514(641 '&?-2&:5(-4 6415'G& 152F51? 614E 41'2&0? 2G1552+ 5 &4$5 (-A2& 614E 2&C 2*-A5&-': 15:41F 46 A'? 2:-'4&?M C5- 41'2&(+C F@5 '&G 4& C 4& -A5 F2LL '&G 2&F D4D* 21 -12'-? 46 A'? A514(A2? F5D':-B 5F A'E 2? -A5 $51C D51?4&'6':2-'4& 46 14E2&-': :A'B

! A'? :51-2'& C @2? &4- A'? :A212:-51(@A':A

I - -# -# '&&&&J&'###'A 8# '# ':#$ $" #8 $'#

-' (

= S

E'GA-' +5' ?2'F' -4' A2$5' +55&' 641E5F' 26-51' 2' 1'D51' D51'4F' 46' :'$' 'L2-'4&' -A2&' -A5' 2G5' 46' :A'$2 1C' 2-' 52?-(' '-' A2F' &4&5' 46' -A5' &4&?5&?5' 46' -A2-' 2G5(' > ''-?' 62&:'6* ' $2G21'5?(' 15:H 5??' 2F$5&-*15(' 2&F' @' F' 14E2&B -':' G2 2&-1C 9' '?' :A212:-51'?-':?' @515' D1*F5&:5(' :44 &5??(' ?-52F'&5??' 46' D*1D4?5(' 2&F' '&-'E2-5' H&4@B 5FG5' 46' E2&' 5' *&F51?-44F(' 2+4$5' 2 (' -A5' -5EB D51' 46' A'?' 4@&' :4*&-1CE5&' 5' E2C' +5' ?2'F' '&' ?4E5' F5G155' -4' A2$5' 641E5F' -A5'1' E' '-21C' :A212:B -51'' -A5'1' D2-'5&:5' 46' ?5$515' -12'&'&G' 2&F' A21F?A'D(' -A5'1' *&6 '&:A'&G' 4+5F'5&:5(' -A5'1' '&6 5J'+ 5' ?D'1'-' *&F51' 15$51?5?(' 2&F' -A5'1' F5:'?'$5' 5&51GC' '&' -A5' A4*1' 46' 2:-'4&' -' '?' :51-2'&(' -A2-' -A5' D2&'?A' ?4 F'51' *&F51' A'?' A2&F?' 2??*E5F' 2&' 5&-'15 C' &5@' 2?D5:-' 6'04E' -A2-' @A':A' A5' A2F' F'?D 2C5F' '&' -A5' 14E2&-':' @21?' 46'-A5' 5&'&?* 2

4&?2 $4' @2?' *&-2'&-5F' @'-A' -A5' :421?51' $':5?' :A212:-51'?-':' 46' -A5' -'E5' 5' F'?:4$515F' &4&5' 46' -A2-' G1'D'&G' 2$21':5(' -44' 46-5&' -A5' 15D142:A' 46' A'?' :4*&-1CE5&' '&' -A5?5' @21?' '?' A2&F' 2&F' A521-' @515' '+512' 2?' -A5' F2C' 5' +5-12C5F' &4&5' 46' -A5' :1*5 -C' 2&F' ':5&-'4*?&5??' @A':A' F'?G12:5' -A5' 2G5' 46' :A'$2 1C' &' 2' 4::2?'4&?' A5' @2?' D14ED-' -4' D14-5:-' @4E5&' 614E' '&,*1C' 41' '&?* -' -A4*GA' A'?' F'?-'&G*'?A5F' E2&&51?' 2&F' 12&H' G2$5' A'E' 4+B $'4*?' 2F$2&-2G5?' @'-A' -A5' ?5J(' A5' &5$51' 2+*?5F' -A5E'N6' 2&F' A5' A2?' 56-' 2' :A212:-51(' *&'ED52:A5F

I' 8 $' ' $ + /' * ' ?#' # '" + ' ' - #&>' ?$ ' * & ' / '#& ' 2' & =? G' + ' /' 0>' 2' $ /' /$ # '" J- # ' $ + ' - >' G# ?' ?' + ' !' =' ' ' +'#' -')@' " # +' - $' '# V' ' G$' ' 8# '# ' :# $' ' :# =' &?$ $& ## #&' *' $' +# /' =' +' -' F)2

+C 2&C A'?-41'2&(46 *&+ 5E'?A5F E412 '-C '& A'? F4E5?-': 15 2-'4&? A'? @2? 2 12'05 $'1-*5 '& -A5 ?'J-55&-A :5&-*1C

4&?2 $40? 62E5 15?-? 4& A'? E' '-21C D14@5??N C5-' A'? :A212:-51 @4* F ?55E' '& E2&C 15?D5:-? +5-B -51 ?*'-5F -4 -A5 :2 E 2&F :* -'$2-5F @2 H? 46 :'$' ' '65 '? G4$51&E5&-' 46 2D 5? 5JA'+'-5F E*:A F'?:15-'4& 2&F ?4*&F D4 ':C 2&F -A515(2? 26-51B @21F? '& A'? 15-'15E5&-(A'? D4 '-5 2&F '+512 ' E2&B &51? ?5:*15F &4-' E515 C -A5 G44F.@' (+*-' -A5 ?-14&G 2--2:AE5&-(46 -A4?5 214*&F A'E ' '? 521 C 5F*B :2-'4&('H5 -A2-' 46 E4?-' 46 -A5 &4+ 5 :2$2 '51? @A4 :2E5 641@21F +56415 -A5 'ED14$5E5&-? '&-14B F*:5F *&F51 ?2+5 2(@2? -2H5& *D @'-A' H&'GA- C 5J51:'?5?(E415 -A2& '&-5 5:-*2 ' 2::4ED '?AE5&-?' 5 @2? &5$51 -2*GA-' 2-'&(2&F A2F &4 D15-5&?'4&? -4 ?:A4 21?A'DN +*-' A5 A4&4*15F 2&F &4+ C 15:4EB D5&?5F '-' '& 4-A51? '? ?4 'F ?5&?5 2&F '+512 ' -2?-5 ?*DD '5F 2 ' F56':'5&:'5? '& A'E?5 6(2&F 5F A'E' -4 ?5B 5:-' 61'5&F? 2&F :4ED2&'4&? 614E' 2E4&G -A5 E4?-' 5& 'GA-5&5F 2&F $'1-*4*? 46 -A5 :4E E*&'-C 6

&' -A'? 62'1 :A212:-51 -A515 15E2'&? 4&5 64* ' 15B D142:A A'? '? A'? +152:A 46 62'-A '& -@4 E5E41.

1 8# '# ' :# ' ' :# =
+ '-'F32 A 8#$ ' #$
/# $- #' #0 'JJJ '&$-'#' '

' 8# '# ' :#$ ' ' :# =
-'F)2
U +#"'/' '$+#"
; ' '-$ $&#$/ '
' -$ # %
; B +#"'/' +#" %

; B +$ '/' * K$/
''$# %
; B ' -$ $ /# & %
; B" $&#$-$ $/ ''
; ' $K %
>0 #" '$ ' "
'$ '0 $' '>/$ '
' V
-$'/' 'P "'
$ #,##

=

2+ 5 '&?-2&:5? 6'1?-(-4 -A5 C4*&G *H5 46 2 2+1'2(2&F 26-51@21F? -4 25?21 41G'2(+4-A 46 @A4E A5 +5-12C5F '&-4 -A5 A2&F? 46 T'&G 51F'&2&F(-A5'1 D51?4&2 5&5EC(2&F '& $'4 2-'4& 46 A'? E4?- ?4 5E& D 5FG5? 9 1*5('- @2? '& 4+5F'5&:5 -4 A'? E2?-510? :4EE2&F?(2&F &4- -4 ?51$5 A'? 4@&D*1D4?5? 2&F -1*5 2 ?4(-A'? @2&- 46 62'-A @2? -A5 +5?5--'&G ?'& 46 -A5 2G5 +*- A'?-41C A2? &4 @2112&- -4 -2ED51 @'-A 1'GA- 2&F @14&G(41 -4 +1'GA-5& -A5 :A212:-51 46 '-? 62$4*1'-5? +C F'E'&'?A'&G 4&5 ?A2F5 46 -A5 2+A4115&:5 @A':A 2--2:A5? -4 -A5'1 $':5? > -A5C ?A4* F 12-A51 +5 A5 F *D '& -A5'1 -1*5 F5641E'-C(2? -A5 E415 :4&?D':*4*? 614E -A5 $51C G152-&5?? @'-A @A':A -A5C 215 2??4:'2-5F -E2C +5 15E21H5F9 A4@5$51(-A2- -A5 15'-512-5F 2&F *&?D21'&G 4X8D14. +1'*E @'-A @A':A 6415'G& @1'-51?(@A4 A2$5 +55& '-- 5 ?5&?'+ 5 -4 4&?2 $40? E51'-?(A2$5 $'?'-5F -A5?5 4665&:5?(26641F? -4 512+ 5 5$'F5&:5 -A2- -A5C 215 -A5 4& C 4&5? 46 2&C E2G&'-*F5 -A2- :2& +5 :A21G5F 4& A'E 6

I "#$ $* ? ?# *$? J$ / : ℃ / $? &$- / $ - / *$' *' $ $- =& / & #" /' ?> 8 = $ ' 6 ? G ' ?# # L #" # '" -# # "$" /' ?#+ # & ? * 0 # '" ? - $& *' $ > $ / # / /' * ' 0' # '" ? $? # > *' ? -$ #$ / ? ‹ # & , & *'G?#&? ? 8 $ $- $# #KL /' ?# - $ /' ?#+ - #L $ & ?' $ $ # ? -$ # ?' ' # *' ? > $ /' *' & ? + *$' $0 8 $ ' $ #$ $' /# +# #'G# ?' & L > +$ D# "' ?$ U' ? 8 $' $- $# + ?$' & L /' ? - 0 #& " /' # ' ? '$**$# ' + ?$ '?# G '*$+ ‹ $' & L / & 'G 'G ?> '0 - / = /0 /' + $ /' 0> $ ' - # & ' $ / V% 6# '/ -$ $ #0' JJ'### &$- '### A 9 #$' $ + ' : #0 ' &$- JJ## A ; # $L $' - ' M 0 ' -- ' 4EF' 4E4 *' ?# '+$>'0 ? "?' '/ L #' & *# +$ # ' * +' ? ' *$& #*' # ' 0 ' $' *$& .' *8 $ ' 0

?' -4' -A5' 'ED*-2-'4&' 46' F'? 4C2 -C(' @5' A2$5' 5 ?5B @A515' A2F' 4::2?'4&' -4' &4-':5' '-?' 2DD215&-' G14*&FB 5??&5??' 9 -'@4* F' +5' ?-12&G5(' '&F55F(' '6'-A5' *&G5B &514*?' -152-E5&-(' @A':A' A5' A2F' 5JD51'5&:5F' 5$51' ?'&:5' A'?' 15-*1&' 614E' 2D 5?(' A2F' &4-' D14$4H5F' 655 '&G?' 46''&F'G&2-'4&' '&' A'?' +4?4E\ &41' @4* F' '-' +5' ?*1D1'?'&G(' *&F51' -A5?5' :'1:*E?-2&:5?(' '6' A5' A2F' +55&' 5F' -4' 15G21F' -A5' 1:AF*H5' A21 5?0?' D15-5&B ?'4&?' -4' -A5' 15G5&:C(' 2?' A5' :2E5' 46' 2G5(' @'-A' 2' 62$4*12+ 5' 5C5' A515' '?' &4' 5$'F5&:5(' A4@5$51(' 46' -A'?(' 41' 46' 2&C' 2:-' *&61'5&F C' -4' 51F'&2&F0?' '&-5B 15?-?' '?' @A4 5' D*+ ':' '65(' 4&' -A5' :4&-121C(' 5JB A'+'-5F' -A5' -1*5?-' 4C2 -C\ 2&F' -A5' 4& C' ?-2'&?' -A2-' F21H5&' A'?' 62E5' @515' '&:*115F' +C' -44' *&A5?'-2-'&G' F5$4-'4&' -4' -A5' @'?A5?' 46' A'?' E2?-51' 5' '?' &4-' -A5' 6'1?-' &41' -A5' 2?-' ?-2-5?E2&' @A4' A2?' 152D5F' -A5' 14C2' 15:4ED5&?5' 46' '&G12-'-*F5(' 641' ?51$'&G' A'?' H'&G' @'-A' G152-51' L52' -A2&' A5' A2F' ?51$5F' A'?' 2H51

51F'&2&F0?' A52 -A(' '&' -A5' E52&' -'E5(' A2F' F5B :'&5F' ?4' ?5&?'+ C(' -A2-' '-' @2?' 5$'F5&-' A5' :4* F' &4-' 4&G' ?*1$'$5' -A5' 4+,5:-' 46' A'?' ,52 4*?C 9' '?' F'?.

/ & $ # "' '?#'/ $?=0 /' ?$' '/ 0 '#D' &?B'& #/ L !' ? ' G ' ? ' $& ' *' ?#' /'$'0 / '#'- ##&'$'G ' #*'G?#&?'?'/ ->' - /\' ?$'$'&#+ G ' *' ? 'G '?#' $ + ' I' ?'+# $& '0 ' *': =' *' "#$'$ /' ?' D' *' $ $L # $' $' # '"# $" ' # ' $" ' 0 #$' 6'G$' # ' - &#"' # ' $" ' * +' $ $" $' ?' ?# /' R' + ' ?# #$ ' $0 ' ?#' #+ ' "$' ' ' *' -- R' $>';# $ $'U' ?$' ? ' - -? #& # # $0 $L 0>' ?#' $ '?' + $ ' ?#' +# L # 'G?#&?'G>' 0 / /' + ' # ' ' - '?#+ *' *' ?' " $' &$ $+# >' ' ?'& >' & G ' *' $- 'G? '#'G$'#' ?' #/' ' G?#&?' ?' 0 G' ?#' - G \% ? ' ?# #$ * '/ /' ?', $ 'G?

= ;

52?5 A2F &4@ ?5-- 5F '&-4 2 F14D?C(2::4ED2&'5F @'-A 2 F'?-15??'&G 2665:-'4& 46 -A5 A521- 5 64*&F F'66':* -C '& +152-A'&G(:4ED 2'&5F -A2- A5 @2? ?-'6 5F '& -A5 :14@F5F :'-'5?(2&F D2??5F E4?- 46 A'? -'E5(5$5& 26-51 -A5 @52-A51 +5:2E5 :4 F('& -A5 6'5 F? 2&F 6415?-?(4::*D'5F(2? 621 2? A'? ?-15&G-A D51E'--5F(@'-A -A5 62-'G*'&G D 52?*15? 46 -A5 :A2?5 ? -A5 @'&-51 2F$2&:5F(A5 +5&- A'? ?-5D? -4@21F? -A5 ?4*-A 5 D2??5F ?4E5 -'E5('& 5:5E+51(2- 2 :4*&-1C.?52- 46 -A5 *H5 46 $2(&521 2:5&-'2(@ '515 A5 A*&-5F -A5 ?-2G 5 -A5& 15?*E5F A'? ,4*1&5C -4 &F2 *?'2(+*- 65 ?4 ' 4& -A5 @2C(2- -A5 '-- 5 $' 2G5 46 2F1'G2 5,4(&521 1*J' 4(-A2- '- @2? 64*&F 'ED4??'+ 5 -4 2F$2&:5 6*1-A51 9

? /# $ G$?$-- / $> + &$ / /# +$> $ /& ## G# ? /# L +$ U * $ *& ?$ " V # ? ? $ *$ G? ? $ /# $ +G$ "? - # ? &&$ # $? * / ? # & G? - *$ L >$ +- /# $ # = + / ' #& G$? $ /* ? G #L ? $ /$ +# # $ &? 2B)5 $ & * G /# - 0$0 > / * # G * $ A ? /#*># "? # > # # " + *? +# $& - GL $ /- * +$ & *? #& L 0 $ /0 $ / > $? #L &$ /0> $ & /* G# # & :$ # --253 A / / & $ 0$!$ $ $ 2@24A 2@2B A M8 + K L 0 8 # * 2(B A

$ > - -# &-# J ## '### J# J#' A 9 # $ $L + '# #0 J &$- J&#J $ 0$!$ $?$? D# "? ?$/0 G$ /0> + ?L $> 0 G$ *$/ #"$ $ /? ?$? ?$/ ' # & $' #/ /' ## "# ? G *? ?$ $+ # /' $ # ? $+ *? - $& ? G$ G# $ G$ - &# > ?$ # /#&$ /0 & - / /' $ "?* $ - /#& # ? ' - ' / ?$? G# &? *? -$# #D ? *& $ / H /D -? G /? *- L +# ? $ /0 $D# ? ? - V

? > / #' # & L *# +$ # * + ? &?$ $& *? /# $ / 6 G$ - L # # $ $ G?# ?# *$& L # G # '#"

A5 H'&G ?55E5F F5?'14*? 46 : 4?'&G A'? 5C5? -4 -A5 F2&G51 46 A'? ?'-*2-'4& 2? 4&G 2? D4??'+ 5 5 @4* F &4- :4&65??(&41 5$5&' 2FE'- A'? :4&65??41 '&-4 A'? :A2E+51 9 5 ?A4@5F ?'E' 21 ,52 4*?C 46 A'? G12&F?4&0? 5&$4C(F1'2& 46 !-15:A- A'? D51B ?4&(-A5 D15:5D-41 46 A21 5?(2&F 26-51@21F? 12'?5F -A14*GA A'? E52&? -4 -A5 D2D2:C(A2F :4E5 '&-4 2?B -' 5 ?4E5 @55H? +56415(@'-A -A5(4?-5&?'+ 5 $'5@ 46 E2H'&G ?4E5 D51E2&5&- 2112&G5E5&- @'-A 51F'B &2&F '& 15G21F -4 -A5 15G5&:C A5 152 E4-'$5(2? -A5 D4@51? @A':A A5 +14*GA- @'-A A'E ?*+?5B M*5&- C D14$5F(@2?(-A2- A5 E'GA- +5 4& -A5 ?D4- @A5& -A5 H'&G F'5F(2&F 2??*E5 -A5 15'&? 46 G4B $51&E5&- 51F'&2&F 15:5'$5F -A5 E'&'?-51 @'-A :4 F :'$' '-C(2&F 2& 2G155E5&- @2? 5&-515F '&-4(+C @A':A -A5 15G5&:C @2? G*212&-55F -4 -A5 + L 21:A(&4- 4& C F*1'&G)42&&20? '65(+*- A'? 4^'& 4&:5??'4&? -4 2 FC'&G E2& :4?- &4-A'&G F1'N& @A4 @2? 2- *2F2 *D5 2- -A'? -'E5(&4 ?44&51 A521F 46 51F'&2&F0? ' &5??(-A2& A5 A2?-5&5F -4 2F1'.' G2 5,4 A5 H'&G(A4@5$51(?*?D5:-5F -A5 E4-'$5? 46 A'? $'?'- R 5 A2? :4E5 -4 ?55 E5 F'5(K ?2'F A5N 2&F(156*?'&G -4 2FE'- A'E '&-4 A'? D15?5&:5

2 $51F2F(K ?2C? 21B +2,2 (R 5 -5&-4 E*:A4 5 5&5.' E'G4 5& 2M*5 D2?4 :4& '&:1:F*.' 'F2F M*5 5 D4&'2 F5 &4 E41'1 -2& D15?-4(D212M*5 &' :4&65??5 &' 15:'+'5?5 4? 2:12E5&-4?K :41F'&G -4 -A5 ?2E5 @1'-51(51F'&2&F@2?+*4C5F *D+C -A5 D15F':-'4& 46 2& 4F ?'+C (R 2 +52-2 F5 21:4(K -A2- A5 ?A4*F &4- F'5 -' A5 A2F :4&8 M*515F)51*?2 5EK / &2 5?(:2D '' 7 5 215 2G2'&15B E'&F5F 46 A2H?D5215(

R -A2-A +55& D14DA5?'5F -4 E5 E2&C C521? ?A4*F &4- F'5 +*- '&)5.' &'?2 5EK

Q# " 6 > :

= = ‘ ‘ U

41F515F‘ -A5‘ E41-‘6‘5F‘ 5&$4C‘ +2:H‘ 2G2‘&‘ -4‘ *2F2.‘
“ *D5 9

-‘ 5&G-A‘ -A5‘ E5F‘:2‘ 2--5&F2&-?‘ $5&-*15F‘ -4‘ ‘&B
641E‘ -A5‘ H‘&G‘ 46‘A‘?‘ 152‘ ?‘-*2-‘4&(‘ :4&,*1‘&G‘A‘E(‘ ‘6‘
A5‘ A2F‘ 2&C‘ 2662‘1?‘ 46‘E4E5&-‘ -4‘ ?5-- 5(‘ -4‘ F4‘‘-‘@‘-AB
4*-‘ F5 2C‘ 5‘ ‘?-5&5F‘ -4‘ -A5E‘ @‘-A‘ :4ED4?*15(‘
2&F‘ 614E‘ -A2-‘ E4E5&-‘ ?55E5F‘ -4‘ 15:4$51(‘2‘ A‘?‘
:*?-4E21C‘ 641-‘-*F5‘ 2&F‘ 5M*2&‘E‘-C‘ 6-51‘ 15:5‘$B
‘&G‘ -A5‘ ?2:12E5&-(‘ 2&F‘ 2--5&F‘&G‘ -4‘ A‘?‘ ?D‘1‘-*2‘
:4&:51&?(‘ A5‘ :2 5F‘A‘?‘ 2--5&F2&-?‘ 214*&F‘A‘?‘ +5F(‘
-4‘ 2F$‘?5‘ @‘-A‘ -A5E‘ 15?D5:-‘&G‘ -A5‘ F‘?D4?‘-‘4&‘ 46‘
-A5‘ G4$51&E5&-‘ E4&G‘ -A4?5‘ D15?5&-(‘ 2-‘ -A‘?‘
-‘E5(‘ @515‘ A‘?‘ 62‘-A6*‘64 4@51?(‘ -A5‘ *H5‘46‘ $2(‘
2&F‘ -A5‘ 21M*‘?‘ 46‘ 5&‘2(‘ A‘?‘ E2,41F4E4(‘ @‘-A‘
?5$512‘+‘?A4D?‘ 2&F‘ E5E+51?‘ 46‘A‘?‘ :4*&:‘ 6

A5‘H‘&G(‘ ‘-‘?55E?(‘ A2F‘ E2F5‘?5$512‘@‘ ?‘ C‘
4&5(‘ 5J5:*-5F‘2-‘ *1G4?‘ ‘&‘ < <;(‘ A5‘ A2F‘ :4E E‘--5F‘
-A5‘G4$51&E5&-‘46‘ 2?-‘ 5‘2&F‘ 12G4&‘-4‘-A5‘ &62&-5‘
51F‘&2&F‘ F*1‘&G‘ A‘?‘ +14-A51‘ A21 5?0?‘ 2+?5&:5‘
A‘?‘C4*&G‘D1‘&:5‘ A2F‘ +55&‘ 5F*:2-5F‘ ‘&‘ D2‘&‘ *&B
F51‘ -A5‘ 5C5‘ 46‘A‘?‘ G12&F62-A51(‘ @A4‘ 5&-51-2‘&5F‘ 2‘
?-14&G‘ 2665:-‘4&‘ 641‘A‘E‘ A5‘ :4*&?5 41?‘ 15E4&.‘
“?-12-5F‘ ‘&‘ -A5‘ D 2‘&5?-‘ -51E?‘ 2G2‘&?-‘ -A‘?‘ F‘?D4?‘B
-‘4&‘ 46‘ -A5‘ 15G5&:C‘ 51F‘&2&F(‘ -A5C‘ ?2‘F(‘ @2?‘ -44

I‘ $ 0$!$‘ $ ‘ ‘$ ‘
2@2B‘&$-‘#‘A‘8 + K‘ =‘
0 3‘8 #‘ 0# - $‘A‘ ‘
$ >‘ - ‘ -# ‘ -# ‘
6*‘MA‘ $ / ‘$‘ 6# ‘ / ‘
+ -‘ $ ‘ :‘ + ‘#‘ -‘4@
X‘ $ 0$!$‘ $ ‘ ‘$*# ‘
2@2B‘&$-‘##

1‘ 21+2,2‘(@A4‘@2?‘2‘E5E.‘
+50‘46‘-A5‘14C2‘:4*&:‘(‘@2?‘D15B
?5&-‘@‘-A‘A‘E‘F*1‘&G‘-A5‘@A4‘5
46‘A‘?‘ 2?-‘ ‘ &5??M 2&F‘A‘?‘ :‘1B
:*E?-2&-‘2‘2&F‘?D‘1‘-5F‘ &2112B
-‘$5‘46‘‘-‘641E?‘2&‘5J:5D-‘4&‘-4
-A5‘G5&512‘:A212:-51‘46‘A‘?‘1
“

C4*&G‘ -4‘ -2H5‘ -A5‘ A5 E‘ ‘&-4‘ A‘?‘ 4@&‘ A2&F?‘ ‘?‘ 2DD4‘&-E5&-‘ @4* F‘ +5‘ ?*15‘ -4‘ :152-5U‘&5@‘ 62:-‘4&?‘ ‘&‘ 2?-‘ 5M ‘-‘ @4* F‘ 12‘?5‘ A‘E‘ *D‘ -4‘ +5‘ ‘&‘ 2‘ E2&B &51‘ 2‘ 1‘$2‘ 46‘ A‘?‘ +14-A51(‘ 2&F‘ H‘&F 5‘ 2E+‘-‘4*?‘ F5B ?‘15?‘ ‘&‘ A‘?‘ +4?4E(‘ @A‘:A‘ :4* F‘ &4-‘62‘‘ -4‘ 5&F‘ ‘&‘ A‘?‘ F‘?2DD4‘&-E5&-(‘ 2&F‘ D51A2D?‘ F5?-1*:-‘4& 9

A5‘ H‘&G(‘ @A4‘ @4* F‘ &5$51‘ A2$5‘ E2F5‘ ?*:A‘ 2‘ F5$‘?5‘ ‘&‘ A‘?‘ +5--519‘ F2C?(‘ @2?‘ E 415‘ 52?‘ C‘ -*1&5F‘ 614E‘ A‘?‘ D*1D4?5‘ &4@(‘ -A2&‘ A5‘ @4* F‘ 4&:5‘ A2$5‘ +55&‘ R 4‘ @A4E‘ -A5&(K‘ A5‘ 2?H5F(‘ R‘?A2‘ ‘ 52$5‘ -A5‘ 15G5&:C‘ 0K>‘R‘ 4‘ Z‘E5&5?(‘ 21:A+‘?A4D‘ 46‘ 4B 5F4(K‘ -A5C‘ 15D ‘5F‘ 51F‘&2&F‘ -*1&5F‘ 2@2C‘ A‘?‘ 62:5(‘ 2DD215&-C‘ ‘&‘ F‘?D 52?*15‘M +*-‘ 26-51‘ 2‘ 65@‘ E4B E5&-?0‘ ?‘ 5&:5‘ 15,4‘&5F(‘ R‘ -‘‘?‘ @5 M‘ A5‘‘?‘ :51-2‘& C‘ 2‘ G44F‘ E2&(‘ @‘-A‘ A4&5?-‘ ‘&-5&-‘4&?‘ 5‘ A2?‘ &4‘ ‘ED41-*&2-5‘ 61‘5&F?‘ 41‘ 62E‘ C‘ -4‘ D14$‘F5‘ 641‘ 5‘ 4@5?‘ 5$51C‘ -A‘&G‘ -4‘ b*55&‘ ?2+5 2‘ 2&F‘ EC?5 6M 2&F(‘ 2?‘ A5‘ A2?‘ 2 @2C?‘ +55&‘ -1*5‘ -4‘ -A5‘ ‘&-515?-?‘ 46‘ 4*1‘62E‘ C(‘ ‘ +5 ‘5$5‘ A5‘ @‘ ‘ 2 @2C?‘ 15E2‘&‘ ?4 K6‘

5(‘ A4@5$51(‘ :4* F‘ &4-‘ ?4‘ 152F‘ C‘ 2+2&F4&‘ -A5‘ ‘F52‘ 46‘ ?4E5‘ ?D 5&F‘F‘ 5?-2+ ‘?AE5&-‘641‘ A‘?‘ 62$4*1‘-5‘ G12&F?4&‘M 2&F‘ A5‘ D14D4?5F‘ -4‘ ?5-- 5‘ 4&‘ A‘E‘ -A5‘ G12&F.E2?-51?A‘D?‘ 46‘ -A5‘ E‘ ‘-21C‘ 41F51?M +*-‘ -4‘ -A‘?‘ A‘?‘ 2--5&F2&-?‘ 2G2‘&‘0‘ 4+,5:-5F(‘ 4&‘ -A5‘ ?2E5‘ G14*&F?‘ 2?‘ +5641 5M 2FF‘&G(‘ -A2-‘ -A‘?‘ D4@516*‘ D2B -14&2G5‘ @2?‘ -44‘ G152-‘641‘ 2&C‘ ?*+,5:-(‘ 2&F‘ ‘ED 41‘&G‘ A‘E‘ &4-‘ -4‘ F5652-‘ -A5‘ 4+,5:-‘ @A‘:A‘ -A5‘ 2-5‘ M*55&‘ A2F‘ ?4‘ E*:A‘ 2-‘ A521-(‘ 46‘ ‘&:41D412-‘&G‘ ‘-‘ @‘-A‘ -A5

I‘ $ 0$!$‘ $ ‘ ‘ $##‘ -‘ +‘F(*+‘ ?*D12
2@2B‘ &$-‘ ##

: ‘ □‘

=

:14@&' R' 51F'&2&F' @' ' +5' 56-' $51C' D441' -A5&(K'
5J: 2'E5F' -Ag' H'&G(' @'-A' -521?' '&' A'?' 5C5?' R' 5'
@' ' A2$5' -A5' G44F.@"' ' 46' A'?' +14-A51(K' 15D '5F' 4&5'
46' A'?' A4&5?-' :4*&?5 41?(' R' -A5' +5?-' 5G2:C' C4*1'
A'GA&5??' :2&' 52$5' A'E K9

A5' -5?-2E5&-(' 2?' 6'&2 C' 2112&G5F(' ?5-- 5F' -A5'
?*::5??'4&' 46' 12G4&' 2&F' 2D 5?' 4&' A'?' F2*GA-51'
)42&&2' 2&F' A51' A5'1?' A5' 2FE'&'?-12-'4&' 46' 2?B
-' 5' F*1'&G' A21 5?0?' 2+?5&:5' @2?' '&-1*?-5F' -4' Z'E5.'
&5?(' 2&F' -A2-' 46' 12G4&' -4' -A5' H'&G0?' &2-*12' ?4&('
-A5' 1:A+'?A4D' 46' 212G4??2(' @A4?5' G44F' ?5&?5' 2&F'
D4D* 21' E2&&51?' E2F5' A'E' 2::5D-2+ 5' -4' -A5' D54B
D 5' 5' G12&-5F' ?5$512' D 2:5?' '&' -A5' H'&GF4E' 46'
2D 5?' -4' -A5' &62&-5' 51F'&2&F(' @'-A' 2&' 2&&*2'
?-'D5&F' 46' 6'6-C' -A4*?2&F' F*:2-?(' :A21G52+ 5' 4&' -A5'
D*+ ':(' 15$5&*5?' 4' A'?' M*55&(' 51E2'&5(' A5' 56-'
-A5' C521 C' '&:4E5' 46' -A'1-C' -A4*?2&F' G4 F' 6 41'&?('
?-'D* 2-5F' +C' -A5' E211'2G5' ?5-- 5E5&-(' @'-A' 6'$5'
-A4*?2&F' 2' C521' E415' F*1'&G' @'F4@A44F 6' A5'
@' ' :4&-2'&5F(' +5?'F5?(' ?5$512' 2DD14D1'2-'4&?' 641'
D'4*?' 2&F' :A21'-2+ 5' D*1D4?5?(' +*-' &4-A'&G' @41-AC' 46'
D21-':* 21' &4-5%fN 4-@'-A?-2&F'&G' -A5' ?'ED ':'-C

I' $ 0$!$ ' $ ' 0# - $' #&' '# / ' ; # #$" $ ' '
1E /# $ /(' "$>'G#/ G' /#/' $ '2' , # &' /#$ ' ((.' '
' "' ! >' ?#' $ ' - L G$' ?' & /' # ' +$ &?'
' '$* ' ?#' / $?' ?' $> '8 #&&#$ /# #'G?#&?' ?$ '
"$' '? '?$ /' ' ?' $, #' *' (' * ' 0'# ' - # #&' $ '
$ / 0 "'$ /'?' />#"' ?' - '#/ /'* ' ?' #"? ' ? #' *'
$"$#' +$ # /' ?' # &' *' $ $L $- ' #$' +' '###' #0'
0 #$'G? '?$/'0 ' / $# /'# '$' H:' -' 2E
' *' ? $0 ' &$- #'# >' # ' P' /# $ /(' $+ '#' '
-$# ' ' ' # &' ?' / ? L 0 '* /'# ' $ 0$!$ ' $ ' '
+ ' *'?#' *$? ' Q# "' / L A' + ' # & ' :$ #

46ʻ -A5ʻ $21'4*?ʻ D14$'?'4&?ʻ 46ʻ -A5ʻ -5?-2E5&-(ʻ '-ʻ @2?ʻ ?4ʻ 4&G(ʻ 614Eʻ -A5ʻ 641E2 '-'5?ʻ 2&Fʻ D51'DA12?5?ʻ @'-Aʻ @A':Aʻ '-ʻ @2?ʻ 5&:*E+515F(ʻ -A2-ʻ -A515ʻ @2?ʻ ?:21:5ʻ -'E5ʻ -4ʻ -12&?:1'+5ʻ '-ʻ '&ʻ ?52?4&ʻ 641ʻ -A5"14C2ʻ ?'G&2.ʻ -*'05ʻ &ʻ -A5ʻ 5$5&'&Gʻ 46ʻ -A5ʻ ;;&Fʻ 46ʻ)2&*21Cʻ < < (ʻ A5ʻ 5J5:*-5Fʻ -A5ʻ '&?-1*E5&-Nʻ 2&Fʻ 2ʻ 65@ʻ A4*1?ʻ 2-51(ʻ +5-@55&ʻ 4&5ʻ 2&Fʻ -@4ʻ 46ʻ -A5ʻ E41&'&Gʻ 46ʻ -A5ʻ ; 1F(ʻ 51F'&2&Fʻ +152-A5Fʻ A'?ʻ 2?-9ʻ A5ʻ ?:5&5ʻ 46ʻ -A'?ʻ 5$5&-ʻ @2?ʻ 2ʻ ?E2ʻ A4*?5ʻ +5 4&G'&Gʻ -4ʻ -A5ʻ 61'21?ʻ 46ʻ *2F2 *D5ʻ Rʻ &ʻ ?4ʻ @15-:A5Fʻ 2ʻ -5&5E5&-(Kʻ 5JB :2'E?ʻ 21-C1(ʻ '&ʻ A'?ʻ *?*2ʻ E412 'L'&Gʻ $5'&(ʻ Iʻ F'Fʻ -A'?ʻ 41Fʻ 46ʻ ?4ʻ E2&Cʻ 2&F?ʻ :4?5ʻ A'?ʻ 5C5?ʻ *D4&ʻ -A5ʻ @41 FK-

51F'&2&Fʻ @2?ʻ &521 Cʻ ?'J-C.64*1ʻ C521?ʻ 4 F(ʻ 46ʻ @A':Aʻ 641-C.4&5ʻ A2Fʻ 5 2D?5Fʻ ?'&:5ʻ A5ʻ 6'1?-ʻ ?@2C5Fʻ -A5ʻ ?:5D-15ʻ 46ʻ 2?-'5(ʻ 2&Fʻ -A'1-C.?5$5&ʻ ?'&:5ʻ A5ʻ A5 Fʻ -A2-ʻ 46ʻ 12G4&ʻ ʻ 4&Gʻ 15'G&ʻN 4&Gʻ 5&4*GA(ʻ '&F55F(ʻ -4ʻ ?55ʻ E4?-ʻ 46ʻ -A4?5ʻ @A4Eʻ A5ʻ A2Fʻ A4&4*15Fʻ 2&Fʻ -1*?-5Fʻ 46ʻ A'?ʻ ?*+,5:-?ʻ G2-A515Fʻ -4ʻ -A5ʻ F*?-(ʻ 2&Fʻ 2ʻ ?*::5??'4&ʻ 46ʻ :4&-5ED4121Cʻ E4&21:A?ʻ :4E5

-ʻ454ʻ ʻ , A $#$ $ʻ 6# ʻ $ʻ* Gʻ? ʻ >0 * ʻ?#ʻ/ $?ʻ /ʻ -$ $.ʻ /ʻ:$ &#$ʻ +ʻ ʻ 0ʻ8 #ʻ* ʻ2() #J ʻ - /ʻ ʻF ʻ 0!$ʻ $ ʻ ʻ$?ʻ 1ʻ '#Pʻ;#&$" $ʻ 2@2B Aʻ $#ʻ $ʻ =ʻ $ʻ ʻ, #&ʻ ʻ/#$ʻ5ZZZ ? + $0 ʻ* ʻ233 A8 + Kʻ ʻ , ʻG$ʻ$ʻ &$$ʻ/ʻ6 $ʻ 0ʻ8 #ʻ* ʻ2(3 G? ʻ ?ʻ &#' /ʻ #/# "ʻ *'?ʻ Uʻ ʻ " +ʻ/ +# ʻ =ʻ ? 0$ /(ʻ# ʻ ?ʻ - /ʻ , ʻ-$ +$ +ʻ& + #ʻ +$ ʻ G#?ʻ $ʻ - #0ʻ / -$&?ʻ ʻ ?# #$ ʻ #"# #ʻ$+- #*#&$=ʻ $/ #"? !<0 ʻ$? "?ʻ?ʻ ʻ ʻ- $ʻ? # +ʻ Jʻ $&? /ʻ#ʻ ʻ ?ʻFE?ʻ ?ʻG$ʻ #ʻ #&$ $ʻ 0##ʻ&$$ʻ ʻ-$ L ʻ$/+# /ʻ $>ʻ8 + Kʻ L - ʻ& $ʻ? +# +ʻ -# # +ʻ G# ? $ /# '"? ʻ $ ʻ ʻ$- #L 0## Vʻ ʻ $ > ʻ - ʻ -# ʻ '$ ʻ# '# Gʻ G#?ʻ ?ʻD# "ʻ -# ʻ J'#ʻA ʻ $ + ʻ :# ʻ #ʻ?ʻ $+ ʻG$ʻ J & / / ʻ6 ++ ʻ ʻ-ʻ)F.

= S

2&F F'?2DD521 'H5 ?A2F4@? 9 5 F'5F F55D C 2B E 5&-5F +C A'? &2-'$5 ?*+,5:-?(@A4 5&-51-2'&5F 2 D21-'2 '-C &2-*12 -4@21F? -A5'- 4@&' A515F'-2'0C ?4$5B 15'G& A5 5$5&- @2? 15G21F5F @'-A $51C F'6651B 5&- 655 '&G? +C -A5 2?-' '2&' &4+ 5?(@A4 :2 :* 2-5F -A5'1 G2'&? 4& -A5 -12&?651 46 -A5 15'&? 614E ?*:A 4 F 2&F(?-52FC A2&F? '&-4 -A4?5" 46 2 C4*&G 2&F '&B 5JD51'5&:5F E2?-51 A5 :4E E4&?(A4@5$51(@A4 A2F 65 - -A5 G44F 5665:- 46 -A'? :*1+ 4& -A5 &4+' '-C('& -A5'1 @& D51?4&2 ?5:*1'-C(A5 F A'? E5E41C '& 15$515&:5 2? -A2- 46 2 &2-'4&2 +5&562:-41 6

51F'&2&F0? 15E2'&? @515 '&-5115F(2G1552+ C -4 A'? 41F51?('& 12&2F2 65@ 46 A'? E4?- 62'-A6* 2FA515&-? 2::4ED2&'5F -A5E M -A5 G152-51 D21- +5B '&G F5-5115F +C 2 D1*F5&- :2*-'4& 46 G'$'&G *EB +12G5 -4 A21 5? A5 6*&512 -12'&(A4@5$51(@2? ?@5 5F +C :4&-1'+*-'4&? 614E -A5 $21'4*? -4@&? -A14*GA @A':A '- D2??5F - 41F4$2(5?B D5:'2 C('- '? @41-AC 46 &4-5(-A2- -A5 21M*'? 46 1'5G4(@A4 A2F ? 5&F51 4+ 'G2-'4&? -4 51F'&2&F(

G? - $D *' $/ #"$! $ $ $ H + &?$ '# $" R G?#&? ? N?$/

I # &M /# $ / $ & / / ? ? ? ?$/ ?$ * D# " *' $ / $ +$ >' *' $ & $ /$ *' $L - < ? *' "$ G 8 L +$ + - $ /' ?$ *' $ / K - - ' ?# G 0! & &$ & >' *' $? '#$+# #$? ? $/ '# ? & *' ?# >' G '#' /' J& - # / / ? PM *' ?# #+ ? & " $ #$ H#+

*' 9 # $' $ ' + '#' #0 &$- & A $ &$ + + $ ## - F)@ A $ K$' 6# #$ + #' #0 #' &$- JJ'

9 # $' $ ' 0# - $' ? ? ' $ > G$ ' *' ? * G G? -$#/ ?# $ #L 0 *' - & ' ? # $ &# +$ ' U " ' + ' / 0#= +' - ! + R $> ? ?# $ L ' ' # & ?$ C -?> #&#$ U & - ! J$ #+ 8 $ $= $+ - &? / +' / # $= $+ & +# $0 V - -# -# J'#

:2E5' 4*-' @'-A' 2 ' A'?' A4*?5A4 F' -4' D2C' -A5' 2?-' E5 2&:A4 C' A4&4*1?' -4' A'?' 15E2'&?' A5C' @515' 15B :5'$5F' @'-A' ?'E' 21' 15?D5:-' '&' 12&2F2(' @A515' -A5' D54D 5(' @A' 5' -A5C' G2L5F' 4&' -A5' ?2F' ?D5:-2: 5(' ?2C?' V*1'-2(' @515' &2-*12 C' 2665:-5F' 2?' -A5C' :2 5F' -4' E'&F' -A5' D4ED' 2&F' ?D 5&F4*1' 46' A'?' -1'* EDA2 ' 5&-1C' 4&' -A5' 6'1?-' 4::*D2-'4&' 46' -A5' 441'?A' :2D'-2 9

C' A'?' FC'&G' '&,*&:-'4&?(' 2 ' *&&5:5??21C' 4?-5&B -2-'4&' @2?' '&-51F':-5F' 2-' A'?' 6*&512 ' '?' +4FC' @2?' 2'F' +C' -A5' ?'F5' 46' ?2+5 2?' '&' -A5' E4&2?-51C' 46' -A5' A2E+12N' 2&F' -A5' C521' 64 4@'&G(P' @A5&' -A5' 14C2 ' :A2D5' 46' -A5' E5-14D4 '-2&' :A*1:A' @2?' :4ED 5-5F(' -A5C' @515' +4-A' -12&?D41-5F' -A'-A51' ' E2G&'6':5&-' E2*?4 5*E' 46' @A'-5' E21+ 5' @2?' 515:-5F' 4$51' -A5E(' +C' -A5'1' G12&F?4&' A21 5?' -A5' '6-A' -' @2?' 5J5:*-5F' '&' 2' ?-C 5' @41-AC' 46' -A5' 2G5' A5' ?'F5?' @515' 2F41&5F' @'-A' 6'G*15?' 46' 2&G5 ?' 2&F' ?2'&-?(' 1':A C' ?:* D-*15F' '&' +2?.15 '56N' 4&' -A5' -4D' 15D4?5F' -A5' 566'G'5?' 46' -A5' ' *?-1'4*?' D2'1(' @A4?5' -'- 5?' 2&F' E51'-?' @515' :4EE5E412-5F' '&' -A5' 64 4@'&G' +1'56(' 2&F' &4-' $51C' 65 ':'-4*?' '&?:1'D-'4&%

7' 8 .8 $!9' # !$:' ; ; ' ; ' 9 9' * 9' 1$!$.- #' & - " /<#" " " . <8' $' #" $"' . #% $ 9' = -' $' <1.-' < " 8 #' ! $.<!' " "$ ' 8"-8.- .' ! "</< $<-' .!' $<8< .>'?

1' $ ' +''#' #0'J'&$-' &'A' ' $ >' - ' -# -# ' S JJ##'A' 0$ &$' > ' $" ' +'##' >'JJJ'&$-' JJ#'' A' $ 0$!$' $ ' ' $## ' 2@2B' &$-'' ' +'/' $' &$/' / '6# ' +''#' ' JJ#

&& /# "' ' / K-' ?#' ' ' /#/' ' $D' - $&' # ' ' #" /$/' / ' 8 $ $L /$' #0'###' &$-'' '## %' /#$K$' #" /$/' / 8 $ $/$' #0' ###' &$-'' '##==== T' $# 0 ' - ' -$" $' $>M $'$"# ' 'S?' $' $

=

T '&G 51F'&2&F0? D51?4&2 2DD5212&:5 A2? +55& 5'?5@A515 &4-':5F ! 5 @2? 46 -A5 E'FF 5 ?'L5#0 ?2C? 2 :4&-5E D4121C(@A4 H&5@ A'E @5 % R A'? :4E D 5J'4& @2? 615?A% A'? 5C5? +1'GA- 2&F 2&'E 2-B 5F% A'? &4?5 2&F E4*-A ?E2 2&F 6'&5 C 641E5F(2&F A'? -55-A @A'-5% A'? 6415A52F 46-C 2&F ?515&5% @'-A 6 4@'&G A2'1 46 2 +1'GA-:A5?-&*- :4 4*1 '? E2&&51? @515 :4*1-54*?(2&F A'? :4*&-5&2&:5 ?5 BF4E : 4*F5F +C 2&C -A'&G 'H5 ?D 55& 41 E5 2&B :A4 C 5 @2? G12$5 '& ?D55:A 2&F 2:-'4&(2&F A2F 2 E21$5 4*? F'G&'-C 46 D15?5&:5 '? @A4 5 F5E52&4*1('& 6'&5(@2? -1* CU-A2- 46 2 G152- H'&G K 41 -A'? 6 2--51'&G D41-12'- 51F'&2&F E*?- A2$5 ?2- 2- 2& 521 '51 2&F A2DD'51 D51'4F 46 A'? '65 9

'? 5F*:2-'4&(4@'&G -4 -A5 -14*+ 5F ?-2-5 46 -A5 -'E5?(A2F +55& &5G 5:-5F '& A'? +4CA44F(-A4*GA A5 @2? 521 C '&?-1*:-5F '& 2 -A5 G5&514*? D2?-'E5? 2&F 5J51:'?5? 46 :A'$2 1C I79 5 @2? 5?-55E5F 4&5

$ #$?$/ $ #"? 0 *$ #L /# :#$""# * 3 ? $ # ? G ' G$ $ -$L #$ /< $ $ & + + $/#L # $ #" ? G D ?# #- *" /> $ +# & -L * ? - # / G? ?$ * + $ > - &#+ * ?# J& L & # / $ /? -$ * -$# + / $ &$/ / 6# + '#- '@)) . $- 0 / (+$" #*#& G D & L $# $ " $'# "* ? + L + * ? $? #& ' L #" $ /? ?# #-$ /P $ $< R , # $-- $ $# $ & / $ # * # /(0 J & # /(& & - # 0 V $- 0 / : >$" # , + $ ## - I $ $ # $ + - $0# * 23F "$ (- $# *? D# " $D $ $# ? + # "* *?# #* ? & *G?#&?? G # /#/ #' $ #, $ > 0 #"? $ /- $ # " 6$0#$ V $> ? U $ " $&#$ # " $, , $P, # & B2 *$0 " $+$0$ / 0 '# - , #$ $ & + + - #&$&# $+#"$0 R > $ #& - '4B *! 6 # /" #"? > R $> "$ U$ /G# ?$ / J #>

46 -A5 E 4?- D5165:- A41?5E5& 46 A'? :4*1- 5 5F 2& 2:-'$5 '65(2&F -A5 4& C H'&F 46 152F'&G A5 2DB D5215F -4 15 '?A @2? A'?-41C - @2? &2-*12 -A2- ?4 +*?C 2& 2:-41 4& -A5 G152- D4 '-':2 -A52-15 ?A4* F A2$5 64*&F D5:* '21 '&-515?- 2&F '&?-1*:-'4& '& -A'? ?-*FC 9

5 @2? &2-*12 C 46 2& 5M*2+ 5 -5E D51(2&F '&: '&5F -4 E4F512-'4& '& 2 -A'&G? A5 4& C 2E*?5E5&- 641 @A':A A5 :215F E*:A @2? A*&-'&G(5?D5:'2 C 62 :4&1C(2&F -A2- A5 &5$51 :211'5F -4 5JB :5?? -' A'? 2?- C521? 6 5 @2? '&F562-'G2+ 5 '& 2DD ':2-'4& -4 +*?'&5?? 5 A2F &4 15 '?A 641 -A5 D 52?*15? 46 -A5 -2+ 50 2&F('H5 ?2+5 2(@2? -5E B D512-5 5$5& -4 2+?-5E'4*?&5?? '& A'? F'5-X 5 @2? 61*G2 '& A'? F4E5?-':2&F D51?4&2 5JD5&F'B -*15 N D21- C(&4 F4*+-(614E 2 @' '&G&5?? -4 15+*H5 -A5 4DD4?'-5 ?D'1'- 46 @2?-56* &5?? 2&F 4?-5&-2-'4& '& A'? &4+ 5? 5 4?- &4 G44F 4DD41-*&'-C 46 F4B '&G -A'? & 4&5 4:2?'4&('- '? ?2'F(A5 -*1&5F -4 2 G2 2&- 46 -A5 :4*1- &4-5F 641 A'? 5J-12$2G2&:5 '& F15??(2&F 2C'&G A'? A2&F 4& A'? 4@& F4*+ 5- 5J.

-$ /0> $ > +$ # ? D# "/ + R > $ #& 0# - $

1 $# ** $ = + $0 * 2@4 A 0$ &$ > / $" + ## > HHH &$- JJ#' A $ / '$ 6# / + - $: + # - 4)

"$ # / / #& ?# * / * &? # $ / ? "$+ * D# # $ > #* > $ B2#& -$ ## &$- ###

$# $ $ + = $0# * 23F A "$ > $? #& -$ ## &$- ###

U - $ / /# G# ? V ? G$ D G $> ?# & ? 8 $ / /+# $ 6 = #, K U G $?$' $&?#&DL * 6# / J + ## - F $. ? >$) (G /?$' $** / /+$ & - * ? $ *$:$ $ /

= ;

: 2'E5F(' R' J:5 5&-' ?-*66' -A'?M '-' A2?' 2?-5F' E5' -A155' D2'1' 46' ? 55$5?' PK' 9' A'?' ?D'1'-' 46' 5:4&4EC' @2?' :211'5F' ?4' 621' 2?' -4' +1'&G' 4&' A'E' -A5' 15D142:A' 46' D21?'E4&CM6' 2&F' D21?'E4&C(' -A4*GA' &4-' ?4' D51&':'4*?' 4&' -A5' @A4 5' 2?' -A5' 4DD4?'-5' $':5' 46' D14F'G2 '-C(' A2?' 2 @2C?' 64*&F' 621' 5??' 62$4*1' @'-A' -A5' E * -'-*F5(' 614E' -A5' 2DD5212&:5' 46' F'?'&-515?-B 5F&5??' @A':A' -A5' 2--51' :211'5?' @'-A' '-' 14F'G2 B '-C' '&' 2' H'&G(' A4@5$51(' @A4' F12@?' &4-' 4&' A'?' 4@&' 15?4*1:5?(' +*-' 4&' -A5' D*+ ':(' 64165'-?' 5$5&' -A'?' 5M*'B $4:2': 2'E' -4' 2DD 2*?5' *-(' '&' -1*-A(' 51F'&2&F' @2?' 12-A51' 61*G2 (' -A2&' D21?'E4&'4*?' '?' '&:4E5' @2?' E4F512-5'M A'?' 5&-51D1'?5?' &*E514*?' 2&F' $2?-' -' @2?' 'ED4??'+ 5' -A2-' A5' :4* F' E55-' -A5E' @'-A4*-' A*?+2&F'&G' A'?' 15?4*1:5?' @'-A' -A5' E4?-' :2156*' 5:4&4EC U' 4' 4&5' A2?' 2::*?5F' A'E' 46' 2--5ED-B '&G' -4' 5&1':A' A'?' 5J:A5M*51' +C' -A5' $5&2' ?2 5' 46' 466':5(' 'H5' 4*'?' -A5' @5 6-A'M 41' +C' G1'D'&G' 5J-41B -'4&(' 'H5' 2&4-A51' 14C2' :4&-5ED4121C(' 5&1C' -A5' 5$5&-A' 5' 2E2??5F' &4' -152?*15(U' 2&F' '&F55F

I' +- ' 6# ' / ' J ' J- /# # ' G ' / $D ' 0# - $' d >' '$&& ' *' ?$'& G <' *' $&?#$' #' 0>' $' # " ' $ /' ?# ' G# ? $ /# "' ? ' U)"' ')& ? '&?$ $& L $#/' * +' $ # ' +$>' JL #K ' '&$ #&$ ' ? '- # & ' - $# ' $ /' # ' + ' / " ' JL *' ?# ' #+ ' U' '#+- $ ' & ' ?# ' ' >' &$ >' +# L # $0# ' ' '$ # <' ' '/# $ =' $ & ' ' ?# ' - &#$' / " ' ' -$ <' ' ' a' ' ' &&$ # ' ?$'# "' /(' "? $' #&& ' * & ' '& =' 0 $# /' $' #0 $' -- >' * +' -#/ ' /# " #$<') ' ' '2' ; ' ? ' $ ' *' $" ' $' $ ' ; ' ' + '.' - ' "# $ # && & .' ?# ' & '$/L ' # ' ' #& & V '# /' ?#+' ' &D' # ' -' $"$# ' ? ' ' *' ?# ' G ' $' /$>' *' / ' U' $ ' ' > V' D# "/ +' *' $" ' G ' ' >' $>' 9 # $' U', ' # +- ' =' #+# / ' 6# ' - # &#-$' * #" - ' "$ $ ' '/# ' - ' &? $=

F'5F ?4 D441(-A2- A5 56- ?:21:5 C 5&4*GA '& A'? :46651? -4 F5612C -A5 :A21G5?' 46'A'?' 6*&512 9

51F'&2&F @2? F5$4*-N 2- 52?- A5 @2? ?:1*D* 4*?' '& 15G21F -4 -A5 5J-51'41 46'15 'G'4& T m5 @2? D*&:B -*2 '& 2--5&F2&:5 4& E 2??N :2156* -4 4+?51$5 2 -A5 41F'&2&:5? 2&F :515E4&'5? 46'A'? :A*1:A N 2&F 56- E2&C -4H5&? 46'A'? D'5-C(26-51 -A5 62?A'4& 46' -A5 -'E5('& ?*ED-*4*?' 5F'6':5? 2&F 5&F4@E5&-?' 641 15 'G'4*?' D*1D4?5?' -A4*GA &4- 2 ?*D51?-'-'4*?' E2& 641 -A5 2G5(A5 '?' :51-2'& C 4+&4J'4*?' -4 -A5 15D142:A 46'+'G4-1C N 641 A5 :44D512-5F @'-A ?2+5 2 '& 2 A51 5J:5D-'4&2+ 5 E52?*15?' '& 2?-' 5(2&F ?D215F &4 56641- -4 62?-5& -A5 4F'4*?' C4H5 46'-A5 &.

E5&-5(' ' ' ' '
' ' ' ' ' '

(-*$4 E2? 2D215,4 D212 512: D521 4(M*5 D212 5&:51121 4K / &2 5?(-4E $'64 ; ; 7
A5 A'?-41'2&('- E*?- +5 2 4@8 5F(2C? M*'-5 2? E*:A 5EDA2 ?'? 4& A'? '+512 '-C 2? '- @! +521

I 0$ &$ > / $" +## > JJJ &$- JJ#' A 9 # $ $ + '#' #0 J &$- & A $ > - -# -# J'#

U :#J $/* # - +-$+ -$ &# *$# ##$ #0 - # 0 /$ ' - $ $ - & #$ $- /' + , $ #0# & " $ - $, /' + , $+ / '#' ! /#&$'# V $ > 0# - $. 8 #&L &#$ /# # $ / ? $+ *$& $ '#/ & *' ? '# ! #& *' ? #+- $ # /#L $ / $ $&&$/ V $//' ?

A'?-41'2&(-1* C 5&4*GA(R M*2? ?5ED15 D51 ' G'*F'L'4 :4114--4 F5G *4E'&'(:A5 &5 5 U D'* 4F2-2 2 D14F'G2 '-2(+5&:AF 2 M*5 2 ?'2 2&&5??2 2 12D2:'-2(:A5 2 D21?' E4&'2 :4&G'*&-2 :4& 02?-'&5&L2 F2 2 14+2 F 2 -1' K / ?-41'2(-4E $' '+ J'' D ; 7
A5 ?-2-5 46 51F'&2&F0? :46651? 641 E5F('&F55F(2?-14&G :4&-12?- -4 -A2- 46 A'? +14-A51 E4&21:A0?(5&1C 'R @A4?5 -152?*15 46 ?-415(K -4 +4114@ -A5 @41F? 46 2:4&("" 56- 2- A'? F52-A(*&F51 A'? 4@& H5C 2&F H55D'&G(2E4*&-5F *&-4 -A5 ?*E 46 5'GA-55& A*&F15F -A4*?2&F D4$EF? ?-51 '&G 2 A*G5 E2?? 46 E4&5C(5$5& 641 -A5?5 -'E5?K / '?-(46 5&1C 41H?($4 : D <S 7
'1 F@21F 4H5 ?@5 ? -A'? A*G5 E2?? -4 I6'6-C 2&F -A155 A*&F15F -A4*?2&F D4*&F?PK &B ?-'-*-5?(D21- '$:A2D JJJ$

= =

M*'?'-'4&' 4&' 12G4&(' 2&F' ?*+?5M*5&- C(' -A4*GA' A2D.'
(D' C' @'-A' 5??' ?*::5??(' 4&' 2D 5? 9

51F'&2&F' A2?' '&:*115F' -A5' E415' ?51'4*?' :A21G5' 46'
ACD4:1'?C' '?' 2-A4':' L52' @2?' 4+?51$5F' -4' +5'
E21$5 4*?C' 566':2:'4*?' '&' 6*1-A51'&G' A'?' -5ED412'
'&-515?-?6' '?' E4?-'4+,5:-'4&2+ 5' 5&-51D1'?5?(' 5$5&('
@515' :4$515F' @'-A' 2' $5'' 46' 15 'G'4&' &' -A'?(' A4@B
5$51(' A5' F'F' &4-' E2-51'2 C' F'6651' 614E' -A5' D12:-':5'
46' -A5' 2G5' 4E5' 46' -A5' E4?-' ?:2&F2 4*?' @21?' 46'
-A2-' D51'4F' @515' 4?-5&?'+ C' 2-' -A5' +'FF'&G' 46' -A5'
:A*1:A(' 41' '&' F565&:5' 46' A1'?-5&F4E' 2G2'&?-' -A5'
'&6'F5' A'?' 4?-5&-2-'4&' 46' 2' 15 'G'4*?' E4-'$5' @2?'
'&F55F' $51C' *?*2' @'-A' -A5' D2&'?A' 2&F' 41-*G*5?5'
A5' :1*?2F'&G' ?D'1'-(' &4*1'?A5F' +C' -A5'1' ?-1*GG 5'
@'-A' -A5' 441?(' 2&F' ?*+?5M*5&- C' +C' -A5'1' 61':2&

9' +21:2(5C5? F5 12G4&(:4&6'1E'&G A'?' 641E51' :4ED2:-'
-4E''' 5C JJJ':2D' JJ'$ > / 415&-5('?-(F5 0 &M*'?'-'4&(
21'&66'4(4?2? 5E412+5?(-4E (''DD')2' 5-' ?5M7 &5
64' <S%; > V*1'-2(&2 5?('+' E2C @5' F4*+-' @A5-A51' +'G4-1C
'J':2D' JJ$' 5&-515F' 2? 21G5C(2? 5?? D21B
51F'&2&F0? :4&F*:-' '& 15B F4&2+5 E4-'$5? 46?-2-5 D4':C(
G21F' -4' -A5' &M*'?'-'4&' '& 12B '&-4' -A'? E'?512+5,*GG '&G
G4&' F'?D 2C5F' ?'&G* 21' F*D':'-C' -' R' '?4'-.4&(K' ?2C? 12&'
&' :4&?5M*5&:5 46' -A5 15E4&B - E5(I'M*5 2' 15C&5 ?2+5 5'F5
?-12&:5 46' :41-5?('& < <;('& 2?-'!55?-4'-' *&5 641-' F5$4-5 5'
@A':A' -A2-' A'GA.?D'1'-5F' +4FC 15 'G'5*?5 D1'&:5??5(5-' M*5 *C(
?5-'641-A' -A5' $21'4*?' *?*1D2-'4&? M*5' G12&F' L5 5 M*0'' C' 5*?-(&05?:
46' -A5 4C' 66':5(51F'&2&F' -4'-' F5$4-'5*J M*5 D21' CD4:1'?'5(
?'G&5F' 2' :4ED2:-(2+1'FG'&G '-? :4*$12&-' ?5? 2:-5? 5-' 2E+'-'4&?
,*1'?F':-'4&' 5' 15D5&-5F' 46' D21' :5 ?2'&:-' L5 5 F5 15 'G'4&K'
-A5?5 :4&:5??'4&?(A4@5$51(2&F' // *$15?(-4E 'D 7R 4D1'(K'
'& -A5' 64 4@'&G C521' 4+-2'&5F' ??C?0 *':':'21F'&'(R'M*2?' -*--5
2' F'?D5&?2-'4& 614E' 4E5 614E' 5 ?*5 :*D'F'-2 ?4--4' :4415' F'
A'? 5&G2G5E5&-?' A'? D14B 4&5?-4 L5 4 F5 2' 15 'G'4&5 5' F'
:55F'&G D14F*:5F'?*:A'2& 2 2&&.' 2&-2' '&-5&L'4&5 2' +5&5 :4.'
'&G 5J:'-5E5&-' '& -A5' H'&GF4E(E*&5K' / ?-41'2(-4E'$'' '+' J'''
-A2-' -A5' E4&21:A' 64*&F' '-' 65J.' D' ; =7 A5' D5&5-12-'&G 5C5' 46'
D5F'5&-' -4' 15&4*&:5' -A5' D2D2' 2:A'2$5 ' G 2&:5? 2-' -A5' ?2E5'
+1'5-' 2&F' 2DD C' 641' 2&4-A51 -12'-' ' 1'&:'D5(:2D' JJ'

2&F' E51':2&' 5JD5F'-'4&?(' G2$5' ?*:A' 2' 15'G'4*?' -4&5' A2+'-*2 C' -4' -A5'1' 655 '&G?' 2?' ?A5F' 2&' ' *?'4&' 4$51' -A5'1' 2:-'4&?' 2&F' 5&-51D1'?5?(' 615M*5&- C' F'?G*'?B '&G' -A5'1'-1*5' :A212:-51(' 5$5&' 614E' -A5E?(5 $5?

-' @' ' &4-' +5' ?4' 52?C' -4' 2:M*'-' 51F'&2&F' 46' -A5' 15D142:A' 46' D516'FC' @A':A' 6415'G&' @1'-51?' A2$5' ?4' F55D C' +12&F5F' 4&' A'?' &2E5(9' 2&F' @A':A' -A4?5' 46' A'?' 4@&' &2-'4&' A2$5' ?4*GA-' 12-A51' -4' D2 '2-5' -A2&' -4' F5&C",' -' '?' +*-' 62'1' -4' A'E(' A4@5$51(' 5$5&' A515(' -4' -2H5' 2' G 2&:5' 2-' -A5' 2G5' 5' :2E5' 641B @21F' @A5&' G4$51&E5&-' @2?' '&' 2' ?-2-5' 46' -12&?'-'4&' 614E' -A5' 65*F2' 641E?' -4' -A4?5' @A':A' '-' A2?' 2??*E5F' '&' E4F51&' -'E5?M' @A5&' -A5' ?*D51'41' ?-15&G-A' 46' -A5' G152-' $2??2 ?' @2?' :'1:*E$5&-5F' +C' -A5' ?*D51'41' D4':C' 46' -A5' 15'G&'&G' D1'&:5?' -' @2?' -A5' F2@&' 46' -A5' -1'*EDA' 46' '&-5 5:-' 4$51' -A5' +1*-5' 641:5' @A':A' A2F' A'-A51-4' :4&-14 5F' -A5' E4$5E5&-?' 46' &2-'4&?(' 2?' 46' '&F'$'F*2 ?' A5' ?2E5' D4':C' @A':A' -A5?5' E4&21:A?' A2F' D*1?*5F' '&' -A5'1' 4@&' F4E5?-':

9' *':::'21F'&'(?-41'2('+' J''' D' ; ' >' *' 5 2C(5.' E4'15?(2D*F' 5-'-4-(4 5:-'4& F5?' 5E4'15?(-4E' J$''' D' ; ;' > '4$'4('?-(?*' 5ED41'?('+ J' D' < M '+' J$' D' ' >' 2:A'2$5 '(D515(-4E' 'J' 5--' '$51?5(4' $'M 5F' 'B 2&4(<S ' >' 51+51-('65 46 5&1C ' D' (> '?E4&F'(5D*+ 'M*5?' -2 '5&&5?(-4E' J$' :A' :J'' > 4-2'15' ?*E?*D 51B F'&2&F?:A212:-51' &-A5 64 '4.@B '&GD'-AC?5&-5&:5% R & 02DD5 ' 2'-5& ?D2G&5#5?2C:(3 # 5& -2 ':' # 5& 12&:55-' 2 4&F15? + / ???'?*1 5? 45*1?(:A2D' :J'$

' R' 6 + ' $' / ' ' /$/ V' $>' "$ ' U'& + ' , # $' , ' ' , ' - # ' $' " $ ' *$&#$ ' $ " $ ' ' & ' '$ #$ V' > ' $ #& ' -$ '##' &$-' ### .' 9 =' # $' J- ' $ /' & / + ' ?# ' 0 +# ?' # ' ?# ' ? C ' &?$ $& ' G# ?' $' &$ / ' G?#&?' / ' ?#+' & /# ' U' ' + >' $/ ' ' ' / ' ' $ " ' - ' / ' ' $ $ ' , ' '" $ /$' $' $' ' /$/ ' >' * ' , ' - + #$' >' , ' '$ - #$' # + - ' >' =' 0 - !$' $' ' - ' / ' ' - L - #$' ##/$/ ' $' ' , ' $'! ' >' ? V' $ ' + ' '#' * ' =

=

15 2-'4&?(-A5C' '&-14F*:5F' '&-4' -A4?5' @'-A' 6415'G&'
'?-2-5?(@A5&(2-' -A5' : 4?5' 46' -A5' 6'6-55&-A' :5&-*1C(
-A5' +211'51?' -A2-' A2F' ?4' 4&G' H5D-' -A5E' 2?*&F51'
@515' +14H5&' F4@&' -2 C' @2?' -A5' 6'1?-' 6'5 F' 4&'
@A':A' -A5' G152-' D4@51?' @515' +14*GA-' '&-4' 2&C'
-A'&G' 'H5' 2' G5&512' :4 '?'4&' '-' @2?' -A5' :4*&-1C(
-44('&' @A':A' -A'?' :126-C' D4 ':C' A2F' +55&' 6'1?-' ?-*B
F'5F(2&F' 15F*:5F' -4' 2' 15G* 21' ?C?-5E' '?'&G 5'5J.'
-'02:-' 614E' -A5' D4 '-':2' E2&*2' 46' -A2-' 2G59' E2C'
?51$5' 2?' 2' H5C' -4' -A5' @A4 5' ?:'5&:5(2?' -A5&' *&F51B
?-44F' R' 'D1*F5&-' D1'&:5(K' ?2C?' 2:A'U$5 '(R'@' '
&4-(2&F' 4*GA-' &4-(-4' 4+?51$5' A'?' 5&G2G5E5&-?(
@A5&' '-' @4* F' 4D512-5' -4' A'?' F'?2F$2&-2G5(2&F' -A5'
:2*?5?' &4' 4&G51' 5J'?-' @A':A' '&F*:5F' A'E' -4' E2H5'
-A5E K6' *66':'5&-' 5$'F5&:5' 46'-A5' D12:-':2' 2DD 'B
:2-'4&' 46' -A5' E2J'E' E2C' +5' 64*&F' '&' -A5' E2&'64 F'
-152-'5?' 46' -A5' D51'4F(?4' :4&-12F':-41C(41(@A2-' '?'
-4' -A5' ?2E5' D*1D4?5' 641' 4*1' D15?5&-' 21G*E5&-(?4'
:4&6'1E2-41C' 46'4&5' 2&4-A51' '&' -A5'1'-5&41(2?' : 521 C'
-4' ?A4@' -A5' 'ED4-5&:5' 46' 2 ' 5&G2G5E5&-?' A515'
'@515' &4' 5??' -A2&' 64*1'?5$512' -152-'5?' '&' -A5' :4*1?5'
46' -A155' C521?(?4 5E& C' ?-'D* 2-'&G' -A5' E211'2G5' 46'
-A5' 1:AF*H5' A21 5?' 2&F' 2*F5' 46' 12&:5' 4*'?'
-A5' @5 6-A' $'4 2-5F' A'?' 5&G2G5E5&-?(2&F' -A5' E21B
1'2G5' 26-51' 2 ' &5$51' -44H' D 2:5%\N

I' ?$ ' : ' # ' -$ #& $ ' kf' + ' - ' #- +$-'
#*# /'?#' - &'* ' $&?#$-' #, ' +'#''-$ '#' ''##
'+ #'0>'?$'#S%' ?' U'R # &#-D(\' ZH'ZZZZJJZZZZJ'J > 5C??5('?-(
$ $ /'* '?#' G ' F5 4*C?'Z 'DD';;S>; >'
-' 2:A'2$5 '(D515(-4E'$'' -' 52'?('?-(F5 4*C?'Z '
' 1'&:'D5(:2D'J$''\' 5F' 5B D' <S=
&4$2(< S

:A' @2?' -A5' ?:A44' '&' @A':A' 51F'&2&F' @2?' -4' E2H5' -1'2' 46' A'?' ?H' ' @'-A' A'?' +14-A51' E4&21:A0' 5' A2F' 2&' 2+ 5' '&?-1:-41' '&' A'?' 62-A51(')4A&' -A5' 5:4&F' 46' 12G4&(' 2&F' -A5' 15?* -' ?A4@5F' -A2-' -A5' 5??4&?' @515' &4-' 4?-' 4&' A'E' R' 5' @2?' $'G' 2&-(' @21C(' 2&F' ?*+-' 5(K' @1'-5?' 2' 15&:A' :4&-5ED4121C(' R' 2&F' 65@' A'?-41'5?' E2H5' E5&-'4&' 46' A'?' +5'&G' 4*-@'--5F' '&' -A5' @A4 5' :4*1?5' 46' A'?' '65K' ' 5' D2C5F' -A5' G2E5' @'-A' E415' 2F14'-&5??' -A2&' A'?' 4DB D4&5&-?(' 2&F' A5' @4&' '-' *::5??(' 2?' *?*2(' +14*GA-' 4&' A'E' -A5U'15D142:A5?' 46'-A5' 4?51?' A'?' '?D21-'. :* 21C' -1*5N46' -A5' 15&:A(' @A4?5' E2?-51(' 4*'?' -A5' @5 6-A('9U 2?' E415' F'15:-C' D'--5F' 2G2'&?-' A'E 6' 5-' 51F'&2&F' F45?' &4-' 2DD521' -4' +5' 2' @A'-' E415' 4+&4J'4*?' -4' -A5' :A2'0G5' 46' *&62'1&5??' -A2&' A'?' 4DD4&5&-%fN' 6' A5' F5?51-5F' A'?' 2 '5?' @A5&

9' 5E4'15?F5' 2C21F(' :A2D J'' >'R' A'?'D1'&:5(K' ?2C?' 41F' 51+51-(' @A4' @2?' &4-' F'?D4?5F' -4' 4$5112-5' -A5' -2 5&-?' 2&C' E415' -A2&' -A5' $'1-*5?' 46' 51F'&2&F(' R' @2?' -A4*GA-' -A5' E4?-' 2:-'$5' 2&F' D4'-':,*5' 46' A'?' -'E5' 4' E2&' H&5@' +5--51' A4@' -4' ?51$5' A'?' -*1&' 4&' 5$51C+4FC(' 41' -4' E2H5-A5'1'58&F?' :4&F*:5' -4' A'?K' '65' 46' 5&1C' 'D' -' ::41F'&G' -4' -A5E(' -A5' 2B -A4'':' H'&G' -44H' &4' G152-' D2'&?' -4' :4&:52' A'?' -152:A51C' 'b*5.' M*0*& F'?22-' *&,4*1' H' 51F'B &2&F(' M*5' 4*'?' Z' 02::*?4'-' F5' 02$4'1' -14ED5' -14'?' 64'?(' 51B F'&2&F'D21*-' E5:4&-5&-' M*0'' *' 12$'-' *&5' D21-'5' F5' ?2' G4'15N 11'' ' ' (' 14 -' (' F'-.'(' 2$5.' -4*-5' 2' G14??'515-5 F*' -5ED?'(+ '14' ' ' ' "5' /2' 21F(' '$2'-5(' -4E' '$' D' ;= 7' A5' 2&5:F4-5' A2? +55&' 15D52-5F' +C' 4-A51' E4F5E' @1'-51?(' H&4@' &4-' 4&' @A2-' 2*-A41'-C' 51F'&2&F' @2?' -44 ?A15@F' 2' D4'-':'2&' -4' A2L21F' A'?' G2E5' +C' D2C'&G' -A5' +12GB G21-' *' 244' '4$'4"?-1'H5?' -A5' +2 2&:5' 46' -A5'1' 15?D5:-'$5' &5.' 1'-?' '&' -A'?' D21-':* 21(' '&' -A5' 64B 4@'&G' -51E?' R' J'A41*E' 5&'E' 4&G5' E2J'E41*E' &4?-1?5' -5E.' D5?-2-'?' 15G*E' '&G5&''?(' 5-' -*1& 'M*'F4' 5-' E*-*E' 2&-52' D1?5.' :215':4ED51-*E' 5?-(' &'A' 4E.' &'&4' ?2&:-*E' 5-' '&$'4 2+' 5(' $5' '&1'-5' :4&:5D-'?' ?2&:'-'?M*5' 645.' F51'+*?' 15D51'1'(' M*4F(' '&D1465.' 15&F'?' 'ED51'?' 2*G5&F'?M*5' 4D'.

= S

'-' ?*'-5F' A'?' :4&$5&'5&:5(' A5' 2-' 52?-' F'F' &4-' F5B '+512-5 C' D 4-' -A5'1' F5?-1*:-'4&(' 2&F' +5-12C' -A5 E' '&-4' -A5' A2&F?' 46' -A5'1' F52F C' 5&5 E C(' 2?' A'?' 1'$2 ' F'F' @'-A' 5&':5' '&' -A5' 52G*5' 46' 2 E A12C(9' ' A5' D21-'-'4&' 46' 2D 5?(' -A5' E 4?-' ?:2&F2 4*?' -12&?2:-'4&' 46' -A5' D51'4F(' A5' ?A215F' 5M*2 C' @'-A' 4*'?N' 2&F(' '6'-A5' 2--51' A2?' 5?:2D5F' -A5' 15D142:A' 46' -A5' *?*1D2B -'4&' 46' 2$2115(' '-' @2?' +5:2*?5' -A5' D15 E 2-*15' F52-A' 46' A'?' G5&512 ' F5D1'$5F' A' E' 46' -A5' D15-5J-' 2&F' E 52&?' 641' 2:A'5$'&G' '-' 5-' 4*'?' -A5' @5 6-A(' -A5' R' 62-A51' 46' A'?' D54D 5(K' A2?' G4&5' F4@&' -4' D4?-51'-C' @'-A' 2' A'GA' 2&F' A4&4*12+ 5' 15D*-2-'4& 6

51F'&2&F(' *&641-*&2-5 C' 641' A'?' D4D* 21'-C(' A2F' &4-A'&G' 46' -A5' 612&H' 2&F' :41F'2 ' -5 E D51(' -A5' G5&'2 ' 5JD2&?'4&' 46' -A5' ?4* (' @A':A' +5G5-?' 4$5 ' 2' :21B 1'5F' -A5' ?2 E 5' :2*-'4*?' 2&F' 'E D5&5-12+ 5' 61'G'F'-C' '&B -4' D1'$2-5' '65(' -A2-' A5' ?A4@5F' '&' D*+ ':' R' 4' 4&5(K' ?2C?' 2' @1'-51' 46' -A5' -'E 5(' R' :4* F' 152F' A'?' -A4*GA-?' +C' 2&C' :A2&G5' 46' A'?' :4*&-5&2&:5 KU 2 E' 2&F

+*?(' 2D*F' 54?' &'A'' 2F' ' *?-1'? 62 E?5 F5:*?' '&-515??5-(F4 4&5 5-' &*?M*2 E' ?'&5 62 2:''?(' 2&' 6'F5 &-5G12' $512M*5' $'1-*-5' &'-515&.' -*1 K' '?-(' ?*' 5 ED41'?(' '+' J'' D' <

' &' 5M*2 C' D51-'&5&-' 5J2 EB D 5' 4::*1?' '&' -A5' 566':'5&-' ?*D. D41-' A5' G2$5' 25?21' 41G'2' '&' A'? 6 2G'-'4*?' 5&-51D1''?5?' 2G2'&?-' ?4 E5' 46' -A5' E4?-' 62'-A6*' 2 '5?' 46' 12&:5' 55' '?E4&F'(' 5.' D*+ 'M*5?' -2 '5&&5?(' -4 E' J''' ' :A2D' :'

,,' 52F' -A5' A4&'5F' D2&5GCB 1':?' 46' 5C??5 (-' 5 2''?(' 4 B -2'155$5&(' -4 ?2C' &4-A'&G' 46' 2'. 21F(' 21' 2?(' ' '% ' (' *&B F' *-5F' +C' ?:21:5' 2' F14D' 46' :5&B ?*15' 215(' '&F55F(' '?' '-' -4' 6'&F' 4&5' ?4 'E+*5F' @'-A' -A5' ?D'1'-' 46' DA' 4?4DAC(' 2?' -4' 12''?5' A' E?5 6 2+4$5' -A5' 4:2' 41' &2-'4&2' D15B ,*F':5?' @A':A' D2??' 641' D2-1'4-'?E' @'-A' -A5' $* G21' '?E4&F' '?' -A5' 4& C' @1'-51' '&' -A5' 15&:A' 2&G*2G5(' -A2-' A2?' :4E5' *&F51 EC' &4-':5(' @A4' A2?' @5'GA5F' -A5' F5?51-?' 46' 4*'?' Z ' '&' -A5' A'?B -41':' +2 2&:5' @'-A' 'ED21-'2'-C' 2&F' :2&F4*1N' 2&F' '?E4&F' '?' &4-' 2' 15&:AE2&

N' '4$'4(' '?-(' ?*' 5ED41'?(' '+' J$'' D'

:2 :* 2-'&G‘ 5$5&‘ '&‘ -1'6 5?‘ '-‘ @2?‘ -44‘ 4+$'4*?‘ -A2-‘ 5$51C‘ -A'&G‘ A2F‘ 5J: *?'$5‘ 156515&:5‘ -4‘ ?5 6‘ 5‘ ?55E5F‘ -4‘ 5?-'E2-5‘ A'?‘ 61'5&F?‘ 4& C‘ +C‘ -A5‘ 2E4*&-‘ 46‘ ?51$':5?‘ -A5C‘ :4* F‘ 15&F51‘ A'E ‘ 5‘ @2?‘ &4-‘ 2 @2C?‘ E'&F6* ‘ 46‘ -A5?5‘ ?51$':5?‘ ℕ‘ @'-&5??‘ A'?‘ *&B G5&514*?‘ -152-E5&-‘ 46‘ 4 *E+*?‘ -A5‘ 152-‘ 2DB -2'&‘ 2$2114‘ Z'E5&5?‘ > ‘-A5‘ E5&‘ @A4‘ ?A5F‘ -A5‘ +1'GA-5?-‘ *?-15‘ 2&F‘ -A5‘ E4?-‘ ?*+?-2&-'2 ‘ +5&56'-?‘ 4&‘ A'?‘ 15'G&ℕ‘ @'-&5??‘ 2 ?4‘ A'?‘ '&?5&?'+' '-C‘ -4‘ -A5‘ $'1-*5?‘ 2&F‘ 4&G‘ 2--2:AE5&-‘ 946‘ ?2+5 2‘ @A4?5‘ E5B E41C‘ A5‘ :4* F‘ ?4‘ ?44&‘ F'?A4&4*1‘ +C‘ 2‘ *&'4&‘ @'-A‘ 4&5‘ 5$51C‘ @2C‘ *&@41-AC‘ -4‘ +5‘ A51‘ ?*::5??41

51F'&2&F0?‘ :4&&5J'4&‘ @'-A‘ ?2+5 2‘ @A' 5‘ '-‘ 15B 6 5:-5F‘ '&6'&'-5‘ G 41C‘ 4&‘ A'?‘ 15'G&‘ ?*GG5?-?‘ 2‘ :4&B -12?-‘ E4?-‘ *&62$4*12+ 5‘ -4‘ A'?‘ :A212:-51‘ 51?‘ @2?‘ 2 ‘ E2G&2&'E'-C‘ F'?'&-515?-5F&5??‘ 2&F‘ F55D‘ F5$4B -'4&‘ -4‘ -A5‘ '&-515?-?‘ 46‘ A51‘ D54D 5‘ '?‘ @2?‘ -A5‘ ?D'1'-‘ 46‘ 5G4-'?E‘ A5‘ :'1: 5‘ 46‘ A'?‘ $'5@?‘ E'GA-‘ +5‘ E415‘ 41‘ 5??‘ 5JD2&F5F‘ +*-‘ ?5 6‘ @2?‘ -A5‘ ?-52FC‘ *&:A2&G52+ 5‘ :5&-15‘ 51‘ A521-‘ +52-‘ @'-A‘ -A5‘ G5&514*?‘ ?CED2-A'5?‘ 46‘ 61'5&F?A'D‘ 2&F‘ -A5‘ D*15?-‘ :4&?-2&:C‘ -4‘ -A5‘ 6'1?-‘ -A5‘ 4& C‘ 4+,5:-‘ 46‘ A51‘ 4$5‘ 5‘ A2$5‘ ?55&‘ -A5‘ E52?*15‘ 46‘ A'?‘ ?5&?'+' '-'5?‘ '&‘ 4-A51‘ 15 2-'4&?‘ A5C‘ @515‘ &4-‘ E415‘ 156'&5F‘ '&‘ -A'?‘ ℕ‘ 2&F‘ A5‘ D14$5F‘ A'E?5 6‘ *&@41-AC‘ 46‘ -A5‘ 2FE'1B 2+ 5‘ @4E2&‘ @'-A‘ @A4E‘ A'?‘ F5?-'&'5?‘ @515‘ *&'-5F‘ +C‘ '&F* G'&G‘ '&‘ -A4?5‘ $':'4*?‘ G2 2&-1'5?‘ -44‘ G5&5B 12 C‘ ?2&:-'4&5F‘ +C‘ -A5‘ 2G5 9‘ 51F'&2&F‘ '&‘ 6'&5

I‘ /# $ /‘ *‘ * ‘ $ =‘ /$ "? ‘ ? ‘ * + ‘ ‘ $‘ &?# / ‘ ‘ ‘$ /‘ ? ‘ ‘ / ‘ $" ‘ G$‘ 0 +‘ *

=S T ‘ ‘

2‘ ?A15@F‘ 2&F‘ D4 ‘-‘:‘ D1‘&:5(‘ R‘ ?*1D2??‘&G(K‘ 2?‘ 2‘ U 15&:A‘ @1‘-51(‘ &4-‘ A‘?‘ 61‘5&F(‘ A2?‘ 15E21H5F(‘ R‘ 2 ‘ -A5‘ ?-2-5?E5&‘ 46‘ A‘?‘ -‘E5‘‘&‘ -A5‘ ?:‘5&:5‘ 46‘-A5‘ :2+‘B &5-(K9‘ E2C‘ +5‘ -2H5&‘ 2?‘ -A5‘ 15D15?5&-2-‘$5‘ 46‘ -A5‘ D5:* ‘21‘ G5&‘*?‘ 46‘ -A5‘ 2G5‘ A‘ 5‘ ?2+5 2(‘ F‘?B :21F‘&G‘ 2 ‘ -A5‘ D5--C‘ 21-‘6‘:5?‘ 46‘ ?-2-5‘ D4 ‘:C(‘ 2&F‘ D*1?*‘&G‘ -A5‘ &4+ 5?-‘ 5&F?‘ +C‘ -A5‘ &4+ 5?-‘ E52&?(‘ ?-2&F?‘ 621‘ 2+4$5‘ A51‘ 2G5

&‘ A‘?‘ ‘ *?-1‘4*?‘ :4&?41-(‘ 51F‘&2&F‘ E2C‘ +5‘ ?2‘F‘ -4‘ A2$5‘ 4?-‘ A‘?‘ G44F‘ G5&‘*? 6‘ 14E‘ -A2-‘ -‘E5‘ A‘?‘ 641-*&5?‘ @515‘ *&F51‘ 2‘ : 4*F‘ 4-‘ -A2-‘ $‘:-41C‘ ?2-‘ 5??‘ :4&?-2&- C‘ 4&‘ A‘?‘ +2&&51M‘ +*-‘ 2-‘ A4E5‘ A5‘ A2F‘ 4?-

I‘ ‘ -A2-‘ ?A4* F‘ 2::4ED2&C‘ 4F‘ 2G5
?‘ A4&4*1(4$5(4+5F‘5&:5(-144D?‘ 4661‘5&F?K

-A5‘ ‘?:4*&-5??‘ 46‘ +4 ‘(2‘ 2B -2 2& 2FC‘ 5‘@2?‘ E2F5‘21:A8 +‘?A4D‘ 46‘ 212G4???2‘ @A5&‘ 4&‘C‘ ?‘J‘C521?‘4 F‘ A515‘@2?‘ ‘-- 5‘ 46‘-A5‘ 15‘‘G‘4*?‘D1465??‘4&(A4@8 5$51(‘&A‘?‘ ‘65‘ 5‘-44H‘2& 2:B -‘$5‘D21-‘ ‘&‘ -A5‘D4‘-‘:2‘2&F‘E‘B ‘-21C‘ E4$5E5&-?‘46‘ -A5‘D51‘4F(2&F‘ ?55E?‘ -4‘A2$5‘ +55& 5$5& 5??‘?:1*D* 4*?‘ ‘&A‘?‘G2 2&-1‘5? -A2&A‘?62-A51‘ ‘? E2&&51?‘‘& D1‘$2-5‘ ‘65‘@515‘2--12:-‘$5(2&F‘ A‘?‘D*+‘:-‘ :4&F*:-‘ F‘?:155-‘ ‘? 62-A51‘2‘@2C?‘15G21F5F‘A‘E‘@‘-A‘ D5:* ‘21‘2665:-‘4&(2&F‘ ‘&-1*?-5F‘ A‘E‘@‘-A‘-A5‘15G5&:C‘46‘ 12G4&(2?‘@5‘A2$5‘?55&(2-‘A‘?‘F52-A

51F‘&2&F‘A2F‘-A155‘F2*GA8 -51?(2?4(+C‘-A155‘F‘66515&-‘2B F‘5?(4&5‘46‘-A5E‘2‘&4+ 5‘ 41-*B G*5?5‘ A5‘ 5F5?-‘ :A‘F‘ @2? &2E5F‘ 4&2‘)*2&2(2&F‘E211‘5F‘ -A5‘ 12&F‘ 4&?-2+ 5‘46‘ 2?-‘5

A5‘4-A51?(52:A‘&2E5F‘ 21‘2(5E+12:5F‘-A5‘15‘‘G‘4*?‘D1465??‘4& ‘&2‘:4&$5&-‘‘& 2F1‘G2‘ 2.‘ 1‘&254(4??2? 5E412+5?(64‘ <SS‘ > 2 2L21‘ F5 5&F4L2(4&21M*‘2(-4E‘‘‘D‘ =< 9‘R‘ &6‘&‘‘?*M?2??2-4*?‘5? 1‘&:5?F5?4&?‘F:‘5‘5& 2?:‘5&:5 F*‘ 2+‘&5-(5-‘:05?-‘2‘*‘M*04& F4‘-‘2--1‘+*51‘5‘D15E‘51‘5-‘5 ?4*$512‘&*?2G5‘F5‘2‘D4‘-‘M*5 E4F5E5K‘ 21‘ 2?(4‘-‘M*5‘5F5 51F‘&2&F(‘$‘‘‘‘‘F‘?:‘J 12&-4E5‘&4-‘:5?‘2‘ % ‘@A‘:A‘A‘?‘:4‘E-1CE5&A2F‘ G‘$5&-4 51F‘&2&F‘ R‘ 4? 12‘‘64‘?‘2DD5‘4‘5&-‘:5‘14C‘ 51B F‘&2&F‘)5A2& ‘D4&(,5‘&5‘?U2C D4*1‘M*5‘5‘F51‘?‘4&M‘E2‘?‘‘ &4*?‘:4*?-2‘+4&(5-‘&4*?‘6‘?-‘ +‘5& F*‘E2(5-‘6*?-‘*& G12&F‘ 14C‘5-‘?2G5K‘ ‘‘:A‘A‘?‘2&:‘B 5&-‘5F‘-41‘-A*?5JD‘2‘&?‘% ‘6

'?' ' .2F$'?5F' E211'2G5' F'?G*?-5F' A'?' 2?-' '2&' ?*+B ,5:-?' 5' 1* 5F' 4$51' -A5E(' '&F55F(' +*-' E415' '&' ?5$51'-C' -A2&' '&' 4$5' A5' +52*-C' 46' A'?' C4*&G' M*55&' 4D5&5F' &5@' ?4*1:5?' 46' ,52 4*?CN9' @A' 5' -A5' F'?D21'-C' 46'-A5'1' 2G5?(' 2&F' A51' 64&F&5??' 641' 61'$4 4*?' D 52?*15(' 2?' '-- 5' M*2 '6'5F' A51' -4' +5' A'?' D21-&51' '&' D14?D51'-C' 2?' A'?' ?4 2:5' '&' F5: '&'&G' C521? 6' '?' -5&2:'-C' 46' D4@51' F15@' A'E' '&-4' $* G21' ?M*2++ 5?' @'-A' -A4?5' E4?-' &521 C' 2 '5F' -4' A'E' +C' + 44F(' @A':A' ?5-- 5F' '&-4' 2' E41-2' 2$51?'4&' '&2 C(' +4F' C' '&.

' ' /' $# ' ; + & &C ' , ' ' $-- '4)' ' ' 4)' .' ' $ ' -$' $' $J '&' - # &'/' C ' $# '" ' + ' -$' $0 ' # '/' $ # ' $' * + + '/ '#' / #' $4)' &' - ' $# #/# ' - /$ ', C ' - #' ')((<' :# '/ ' 6 + + ' /# &' '.' ? '#' + ' ? + ' ?$' ?'#' ?' >+ ">' ?' ; ' 'G$' -$' *' $' +$ C' $L # '0 # "'$' ' > G?# '/ L *# '#' U'$' ? '&$ &DV'$ /' G$' G ' / ' ?' $ + ' ? ' ?$ & '#' ?' " ' '?#'R' $ 0 >' $ V' $>' *'?#'D #"? C' /

U' *** #$' ?'G /'$"#- ' ' 0 + /' G# ?' ?#' ?$0 " V "$# '#'?#'U'Q #"? C' $ V U' +'G '0 '$ + /'#'$' ?$0 " &F' '& 2' +15?-.D 2-5(2&F' '& 2' G'D4&K

' A5&' 51F'&2&F' $'?'-5F' 12G4&('& < < (F*1'&G A'? -14*+5? @'-A' -A5' :41-5?(A5' 'E.

D1'?4&5F'-A5'$':5.:A2&:5 41(&B -4&'4' G*?-'&N' +5'&G' E4$5F' -4' -A'?(2::41F'&G -4' 21+2,2(+C' A'? ,52 4*?C' 46' -A2-' E'&'?B -51?' 2--5&-'4&?' -4' A'? C4*&G' M*55&' / &2 5?(2&4' < < (7' -' '? D4??'+5' V*1'-2(A4@5$51(-152-? '-' 2? E515' ?:2&F2(15651B 1'&G -A5' 'ED1'?4&E5&-' -4' D4 '-'B :2' 4665&:5? 5J: *?'$5 C' &2 5?(-4E'$'' 64')7) > 55 2?4 41B E51(&2 5? F5 2' 414&2 F5 12B G4&(/V212G4L2(< (7 '+' '' :2D' 'J

-' ' 12' D4:4 A51 E4?2(K' ?2C? 2&F4$2(@A4 G1*FG5? A51' 5$5&-A'? M*2 '-C(I' 2 G4 :4,2(2E'G2 E*:A4 F5 A4 G21?5(C' 2&F21' 5& +2&M*5-5?(A*51-4? C',21F'&5?(C' 5&6'5?-2?' &-14F*J4 5?-2 5&412 5& 2?-' 2 :4E'F2? ?4+51+'2?(?'5&F4 4? 2?-5 2&4?(C' 2*& ?*? 5C5? E*C' E4F512F4? 5& 5?-4' 2?2+2&?5 5 D4:4? F'2? M*5 &4 :4&$'F2?5(' 6*5?5 :4&$'F2F2' 2 M*5 E2? G2?-2+2 5& 6'5?-2?C' +2&M*5-5? :4& 5 2(512 E2? ?*' 2E'G2K' '?-(F5' ED' 21 4? ' -4E' '' D' <;

: ' ;'

=S;

6'1E'-C +14H5 -A5 5&51G'5? 46 A'? E'&F(?4*1 ?*?D'B :'4&? :4114F5F A'? A521-(2&F A5 A2F -A5 E'?641-*&5 -4 '$5 4&G 26-51 A5 A2F 4?- 2 -A2- :4* F E2H5 '65 F5?'12+ 5

5- *? -*1&' 614E -A'? G 44EC D':-*15 -4 -A5 +1'GA-51 ?52?4& 46 -A5 E41&'&G 2&F E51'F'2& 46 A'? '65(@A5&' A5 ?2- @'-A ?2+5 2 4& -A5 *&'-5F -A14&5? 46 2?-' 5 2&F 12G4&(?-14&G '& -A5 4$5 46 A'? 4@& ?*+,5:-?(2&F '& -A5 6521 2&F 15?D5:- 46 A'? 5&5E'5? 5 ?A2 -A5&' 6'&F E*:A '& A'? :A212:-51 -4 2FE'15 A'? 'ED21-'2 ,*?-':5 '& -A5 2FE'&'?-12-'4& 46 -A5 2@? A'? @2-:A6* ?4 ':'-*F5 -4 ?A'5 F -A5 @52H 614E -A5 4DD15??'4& 46 -A5 ?-14&G A'? @'?5 5:4&4B EC(@A':A 2:A'5$5F G152- 15?* -? @'-A4*- +*1F5&'&G A'? D54D 5 @'-A 4DD15??'$5 -2J5?' +'? ?4+1'5-C 2&F E4F512-'4& -A5 F5:41*E(2&F 15?D5:- 641 15 'G'4&(@A':A A5 E2'&-2'&5F 2E4&G A'? ?*+,5:-? -A5 '&B F*?-1C A5 D14E4-5F *@A4 5?4E5 2@? 2&F A'? 4@& 5J2ED 5 A'? :4&?*EE2-5 ?2G2:'-C(@A':A :14@&5F 2 A'? 5&-51D1'?5? @'-A +1' '2&- ?*::5??(2&F E2F5 A'E -A5 412: 5 46 -A5 D1'&:5? 46 -A5 2G5

2:A'2$5 '('&F55F(-A5 E4?- F55D C 152F 46 A'? -'E5 '& A*E2& :A212:-51('ED*-5? 51F'&2&F0? ?*:B :5??5?('& 4&5 46 A'? 5--51?(-4 R:*&&'&G 2&F G44F *:H(12-A51 -A2& -4 ?*D51'41 @'?F4E K' 9 5 @2?

D515(-4E 'J 5--515 A5?5?-2-5?E5&@515 -A561'5&F? '$51?5(4 $' 5F ' 2&4(46 12&:5(@'-A @A4E 51F'B 23E@ &2&F @2? 2- @21(2&F D51B '? :4115?D4&F5&-(5--41'(?4&2 5&5E'5? 46 -A5 5F':'('? ?-' E415 ?5$515 '& A'? 2&2B @A4E -A2- D1'&:5 155?-2+ '?A5F C?'? 46 51F'&2&F0? D*+':' :4&B '& -A5 G4$51&E5&- ? D4 '-'B F*:- / 5-(F < 2GG'4(< <=7 :2 2&-2G4&'?-? - '5156415(5$51C

=S

'&F55F 641-*&2-5 2&F -A5 R ?-21 46 *?-1'2(K @A':A 14?5 2? A'? F5: '&5F(?A4&5 &4- @'-A 2 +1'GA-51 41 ?-52F'51 *?-15 *-?*::5?? -A14*GA 2 4&G ?51'5? 46 C521? ?*66':'5&- C(46 '-?5 6(2--5?-? G44F :4&F*:- R A5 @'&F? 2&F @2$5?(K ?2C? '++4&(-1* C 5&4*GA(U215 2 @2C? 4& -A5 ?'F5 46 -A5 E4?- ?H' 6* E21'B &51 K 6 A5 415&-'&5 ?-2-5?E2& A2? 15:41F5F 2 1'D51 2&F E415 F5 '+512-5 ,*FGE5&- '& -A5 -152-'?5 @A':A A5 '&-5&F5F 2? 2 E'1141 641 -A5 1* 51? 46 -A5 -'E5 R 4-A'&G(K ?2C? A5(R G2'&? 5?-'E2-'4& 641 2 D1'&:5 'H5 G152- 5&-51D1'?5? *1 4@& 2G5 A2? 6*1&'?A5F 2 ?D 5&F'F 5J2ED 5 46 -A'? '& 51F'&2&F 46 12G4& 5 E2C :2 A'E 2 &5@ H'&G(?'&:5 614E 2 655+ 5 4&5 A5 A2? E2F5 A'E?5 6 -A5 E4?- 15B &4@&5F 2&F G 41'4*? E4&21:A 46 A1'?-5&F4E 2&F('6 @5 D4&F51 @5 A'? E2&'64 F 2:A'5$5E5&-?(@5 E*?- 2:H&4@ 5FG5 2 46 -A5E $51C G152-(2&F ?4E5 -1* C 5J-1241F'&21C K9

-A51 5E'&5&- 6415'G&51? 46 -A5 -'E5 ,4'& '& -A'? 46-C ?-12'& 46 D2&5GC1':6 A5 2?-' '2&?(E'&F6*

@2C(46 -A5 2-A4 ':H'&G(-A5C @515 &4- 'H5 C -4 +5 2 -4G5-A51 *&+'2??5F '& -A5'1 ,*FGE5&-? 46 A'? D4 ':C > A5?5 $'5@?(A4@B 5$51(6'&F 62$4*1 @'-A 41F 51+51-(@A4 A2F 5$'F5&- C 152F(-A4*GA A5 F45? &4- 1565 -4(-A'? :4115?D4&F5&:5 '65 46 5&1C D 9 D515(-4E $'' 1'&:'D5(:2D JJ' 5F 5&4$2(< S X $ > G? ?$/ 0 -- ## ?$ $ > ? * #" * #+$ # '" ? &?$L

$& * /# $ / $** / ? + ? $0 #+ > ?# D# " > , $ # # $ G # G? ? ? G # ?$/ + #' * * $ > $* ?$ + $ &?(/ $?' ?$: (-?> #&#$ - -# -# J'## .' 8 #&&#$ /# #'G? $L # $ - ! /#& /#/ #'# ?# &$ & +- ? / $ > $ + &?' # 0 # * & / /# && # #+ &# "# '# , $ * $ & $ - +

46 -A5 G5&512 ?5:*1'-C 2&F D14?D51'-C -A5C A2F 5&B ,4C5F *&F51 A'? 15'G&(?55E @' '&G -4 +*1C A'? 612' -'5? '& A'? G12$5M 9 @A' 5 A'? 4@& A515F'-21C ?*+,5:-?(5J* -'&G @'-A D2-1'4-': D1'F5 '& -A5 G 41C -4 @A':A A5 A2F 12'?5F -A51 D5--C ?-2-5(2&F -4*:A5F @'-A G12-56* 15:4 5:-'4&? 46 A'? E ' F(D2B -51&2 G4$51&E5&-(F5D 415 A'? 4?? '& ?- '&?' 46 &2-'4&2 ?4114@("\" 2? -A5 2?- 46 -A5 15$515F '&5 @A4

&4 D4-15?-'62:' E5&-51'D15&F515 :4?2 2:*&2K ?-41'2(-4E $'' '+ J'' D 2)"8 55 2?4 12&-4E5(/ *$15?(-4E '$ F'?: . > '4$'4(@'-A ?:21:5C E415 M*2'6':2-'4& '?-(?*' 5ED41'?('+ J$'' D > 2$2G'514('2GG'4(64 ; > 5- 2'4?

9 R 1'&:'D5 5 E2? ?5&2 2: F4(K ?2C? -A5 D1'&:5 46 -A5 2?B -' '2& A'?-41'2&?('& A'? D'-AC E2&&51(R 5& $2 41 C ,*?-':'2 C D1*F5&:'2 M*5 5& E*:A4? ?':. G 4? ?D2''2 -*$4 2:A2? 2 &2F'5 D*5F5& 62-21 ?52 D41 2 612G' 'F2F D14D'2(' D41 2 E2:' ':'2 C 5&$'F'2 2G5&2 M*5 :41&: A2-5 D1'&:'D2 E5&-5 4? 2-4? *G215? ?D5,4 ?'& F*F2 D41 ! G12&F5? $'1-*F5? 5& M*5 -4: F4? 4? 1'&:'D5? F5 ?D2&2 ?5 F5+5& E'121K / 21'2&2('?-' F5 ?D2&2(-4E 'J D (:2D * -7 55 2?4 2 ?'B E' 21 -1'+*-5 -4 A'? F5?51-?(@'-A G152-51 2ED '6':2-'4&('& 21'+2C(4ED5&F'4(-4E ''' '+ HH :2D JJ'$ > 4E5L(5 5+*? 5?-'?(64 <=S > ! 42('-2 F 21 4 64 . > 51: 1512?' '?- F 0 ?D2G&5(-4E 'J

D = ; 5-?5Mdd 5- D *1'E'? 2*:-2&-'M 5- 15:5&-'+*?

6 55 -A5 :4?'&G :A2D-51 46 -A5 G152- 12G4&5?5 2&&2 '?-(@A4 -51E'&2-5? A'? A'?-41':' 2B +4*1? @'-A -A5 F52-A 46 51F'B &2&F -A5 2-A4 ':' /V*1'-2(&2 5?(-4E $'' '+ J :2D : 7 @' :'-5 4& C 4&5 5J-12:- 614E -A5 D146*?5 D2&5GC1':? 46 -A5 &2-'4&2 @1'-51?(@A':A 2-B -5?-? -A5 $5&512-'4& '& @A':A 51F'&2&F0? E5E41C @2? A5F '& 12G4& - '? 614E 4&5 @A4?5 D5& '? &5$51 D14?-'-*-5F -4 D212?'-':2 41 D21-C D*1D4?5?(2&F @A4?5 ,*FGE5&- '? *?*2 C 2? :4115:- 2? -A5 5JD15??'4& 46 '- '? :2&F'F R b*4 D 2&G415 2: 2E5&-2-'4&5 *&'$51?2 :'$'-2? :4ED 5+2-*1 5M*5 ?4 *E A4B E'&5?(?5F 'D?2 -5:-2(5- D21': 5-5? *1+'? $'F5+2&-*1 2:51+*E ' '*?(M*' 4E&'+*? :A21''?' E*? 512-('&-51'-*E *G515 - E5: 1'-4 12- 5&'E(*- ?:'-'?(5J: 5ED *E D1*F5&-'45 2: 641-'-*F': &'?% ?*EE:5 '& 15 F4E5?-':F :4&-'&5&-'25% 5J'E'25 '& D*+: ':2 F'G&'-2-'?% A*E2&'-2-'? D12:-5152(2: 5D41'? 2FE'12+' '?' 99999 5M*5 54? ?4 6'E(?5F

@2? -4 D15?'F5 4$51 -A5 F5?-'&'5? 46 12G4&(2? 2 ?5D212-5 2&F '&F5D5&F5&- H'&GF4E

4E&5? :51-Ù -2&-2 2ED5:-5+2: -*1 +5&5$4 5&-''(*- '&-51F*E &4& &4+'? T5J(?5F *&'*?:*,*?: M*5 &4?-1*E G5&'-41 2: D215&? $'F515-*1 4?- 5,*? '&-51'-*E 4E&'? &4?-12 ,*$5&-*? 2&G*5-(F5':''? D*? F5F'-2 M*2E F5:5: 15-Ì &5: D51'&F5(2: F5+*512-('& 2*F'? 5- G41' : *D'F'-2-5 $51?2-*1 g g b*'F D*120 &* 2 15? 6*'- '& *?*+5&5 15G: &2&F D4?'-2(M*?5 ' '*? 5G'? ?:'5&-'2E 566*G515- g g *'-5&'E 5J'E' :41D41'?$5&*?. -2-5 D1:5F'-*? 5F D*1'? 62: :515 F5+515&- :4&?' '4&'E 2: $'1-*-*E ?*21*E(M*2E D4?-51'? 15 'M*'-(566'G'5E M*'+*? F5&': M*5 62:-*E $'F5E*?(*- 2+ 54 *?M*5 2F A4: -5ED* ; &4& ?4B *E &4+'?(?5F '?D2&'?5 :*&:: -66'(F'*-*E'-2? D2:'? 4-'*E :4&: 6'1E21'- ?5: 2 '2M*55,*?E4F M*4-'F'5 2 &4?-1'? ?5&'+*? F5 2-A4 ':' 5G'? E5E41'2 5&21: 12&-*1 M*25 2 15' $51'-2-5 &5: M*2M*2E 2+A4115&- f 2&:2?(4E E5&-21''(D ;

=S

‘ Z Z

(‘ (‘ ‘ ‘ ‘

‘ Z

< < (‘ < <

‘ D51?4&2‘ A'?-41C‘ 46‘ 51F'&2&F‘ -A5‘ 2-A4 ':‘ -51E'&2-5?(‘ 46‘ :4*1?5(‘ @'-A‘ -A5‘ D15:5F'&G‘ :A2D-51‘ &‘ 41F51‘ -4‘ +1'&G‘ -A5‘ A'?-41C‘ 46‘ A'?‘ 15'G&(‘ A4@5$51(‘ -4‘ 2‘ ?*'-2+ 5‘ : 4?5(‘ '-‘ '?‘ &5:5??21C‘ -4‘ :4&-'&*5‘ -A5‘ &2112-'$5‘ -A14*GA‘ -A5‘ +1'56‘ 15G5&:C‘ 46‘ Z'E5&5?(‘ -4‘ -A5‘ D51'4F‘ @A5&‘ -A5‘ G4$51&E5&-‘ @2?‘ F5 '$515F‘ '&-4‘ -A5‘ A2&F?‘ 46‘ 51F'&2&F0?‘ G12&F?4&‘ 2&F‘ ?*::5??41(‘ A21 5?‘ -A5‘ '6-A

C‘ -A5‘ -5?-2E5&-‘ 46‘ -A5‘ F5:52?5F‘ E4&21:A(‘ 2?‘ @5‘ A2$5‘ ?55&‘ 21F'&2‘ Z'E5&5L‘ F5‘ '?&514?‘ @2?‘ 92DD4'&-5F‘ ?4 5‘ 15G5&-‘ 46‘ 2?-' 5‘ 5‘ E5-‘ @'-A‘ 4DD4?'-'4&(‘ A4@5$51(‘ 614E‘ F1'2&(‘ -A5‘ 52&‘ 46‘ 4*B $2'&(‘ @A4‘ D14F*:5F‘ D4@51?‘ 46‘?'E' 2'0‘ D*1D41-‘ 614E‘ 1'&:5‘ A21 5?‘ 5'-A51‘ D21-C‘ :4* F‘ +42?-‘ 2‘ ?*66'B :'5&-‘ @2112&-‘ 641‘ 5J51:'?'&G‘ -A'?‘ 'ED41-2&-‘ -1*?-M‘ -A5‘ 4&5‘ : 2'E'&G‘ '-‘ +C‘ -A5‘ 2DD4'&-E5&-‘ 46‘ 2&‘ '&F'B $'F*2‘ @A4(‘ 2:-'&G‘ E515 C‘ 2?‘ 15G5&-‘ A'E?5 6(‘ A2F‘ :51-2'& C‘ &4‘ 1'GA-‘ -4‘ &2E5‘ A'?‘ ?*::5??41M‘ @A' 5‘ -A5‘ 4-A51‘ A2F‘ 4& C‘ -A5‘ ?2&:-'4&‘ 46‘ 2‘ D1'&:5‘ @A4(‘ 2-‘ -A5‘ -'E5‘ 46‘ G'$'&G‘ '-(‘ A2F‘ &4‘ ,*1'?F':-'4&‘ @A2-5$51‘ '&

' ' Z =S

2?-' 5' A5' E'?*&F51?-2&F'&G' @A':A' 5&?*5F' @2?'
6'&2 C'?5-- 5F' +C' 2&' 2G155E5&-'46'-A5' D21-'5?' -4' ?A215'
-A5' 2*-A41'-C' '&' :4EE4&(' -' ' 6*1-A51' '&?-1*:-'4&?'
?A4* F' +5' 15:5'$5F' 614E' A21 5? 9

-' @2?' &4-' 4&G' +56415' -A5C' 211'$5F' A5C' :4&B
6'1E5F' -A5' :21F'&2 0?' 2*-A41'-C' '&' -A5' 6* 5?-' E2&B
&51(' @A' 5' -A5C' ?D4H5' 46' F1'2&' 4& C' 2?' 2&' 2E+2?B
?2F41' A5C' '&-'E2-5F(' A4@5$51(' -A5' E4?-' 5&-'15'
:4&6'F5&:5' '&' -A5' 2--51M 2&F' -A5' -@4' D15 2-5?' :4&B
-'&*5F' 2?' +56415' -4' 2FE'&'?-51' -A5' G4$51&E5&-',4'&-B
C' Z'125&5?' ?2:1'6':5F' &4-A'&G' +C' -A'?' 2112&G5B
E5&-'M 641' -A5' -2E5' 2&F' M*'5-' -5ED51' 46' F1'2&'@2?'
-44' E*:A' 4$512@5F' +C' -A5' +4 F' G5&'*?' 46' A'?' D21-B
&51(' -4' 12'?5' 2&C' 4DD4?'-'4&' -4' A'?' E52?*15? U

A5' 6'1?-' 15M*'?'-'4&' 46' 1'&:5' A21 5?' @2?' 4&5'
-A2-' -2J5F' ?5$515 C' -A5' D4@51' 2&F' D4D* 21'-C' 46' -A5'
&5@' 15G5&-' A'?' @2?' -4' A2$5' A'E?5 6' D14: 2'E5F'
H'&GM 2' E52?*15' 5J-15E5 C' F'?-2?-56*' -4' -A5' 2?B
-' '2&?(' @A4' 15G21F5F' '-' &4-' 4& C' 2?' :4&-121C' -4' 5?-2+B
'?A5F' *?2G5(' F*1'&G' -A5' '65-'E5' 46' A'?' E4-A51(' +*-'
2?' 2&' '&F'G&'-C' -4' A51' -' @2?' '&' $2'&' -A2-' Z'E5&5?'
2&F' -A5' :4*&:'' 15E4&?-12-5F' 4&' -A5' 'ED14D1'5-C'
2&F' 'ED4':C' 46' -A5' E52?*15 %fM A21 5?(' 641-'6'5F

9' 21+2,2(&2 5?('2''4 &4-'$5&-*15' 4&' -A5' -'-5' 46' H'&G
< < (:2D' $''' > 4+5?('F2' '&' A'?' :41157D4&F5&:5' @'-A' -A5'
F5' Z'E5&5L(:2D' J$''' > ' 4B 2?-' '2&?(-A4*GA' A5' 2665:-5F' '-
E5L(5' 5+*? 5?-'?(64' < ' 2+142F' &2 5?('2&4 < < (
> b*'&-2&' 2(1:A5-CD5(' '+' :2D' H
'$' :2D' : > $'5F4(b*'&:*2G5.'
&2?('F'2 (F5' Z'E5&'

-' 21+2,2' A2? G'$5& *?)' A5' 5--51' 46' -A5' :4*&:'' '?
A21 5?? 5D'?-5(@A':A' '? ?*+B F2-5F' 21:A' <=-A(< < ' -' '?
?:1'+5F' R' ' 1'&:'D5K' 5' F'F 15:41F5F' +C' 21+2,2(&2 5?(
'2&4 < < (:2D' J

=SS ' ' Z

+C' A'?' 5E'?A' 2F$'?51?(' ?-*1F' C' D51?'?-5F' '&' A'?' D*1D4?5'ℕ -A5' :21F'&2 (' :4&?5M*5&- C(' :2 5F' 2' E55-B '&G' 46'-A5' D15 2-5?' 2&F' D1'&:'D2 ' &4+ 5?' '&' 2F1'F(' -4' @A':A' A5' A29F -12&?65115F' -A5' ?52-' 46'G4$51&E5&-(' 2&F' @A4?5' :5&-12 ' D4?'-'4&' 2&F' 4-A51' 4:2 ' 2F$2&B -2G5?' E2F5' '-(' 614E' -A'?' -'E5' 641@21F(' @'-A' '-- 5' $21'2-'4&(' -A5' 15G* 21' :2D'-2 ' 46'-A5' H'&GF4E 9' A5' 4:-41' 21+2,2 ' D15D215F' 2' ?-*F'5F' 2&F' D 2*?'+ 5' 21G*E5&-' '&' ?*DD41-' 46'-A5' E52?*15(' 6 ' ?' '-' 62' B 5F(' A4@5$51(' -4' D14F*:5' :4&$':-'4&' '&' A'?' 2*F'5&:5(' Z'E5&5?(' :A265F' +C' -A5' 4DD4?'-'4&(' 2&F' D14+2+ C' F'?-1*?-'&G' '-?' 152 ' E4-'$5?(' D515ED-41' C' F5: 215F(' -A2-' -A4?5' @A4' 156*?5F' -4' 2:H&4@ 5FG5' A21 5?' 2?' H'&G(' '&' -A5' D15?5&-' ?-2-5' 46' -A'&G?(' @4* F' 156*?5' -4' 4+5C' A'E' @A5&' A5' @2?' ?4' R ' @' ' A2$5' A'E' D14: 2'E5F' '&' 2F1'F' -4.E4114@(00' ?2'F' A5(' R 2&F' ' F4*+-'&4-' 5$51C' 4-A51' :'-C' '&' -A5' H'&GF4E' @' '64 B 4@' -A5' 5J2ED 5K' 5' @2?' 2?' G44F' 2?' A'?' @41Fℕ 2&F' -A5' :4&F*:-' 46' -A5' :2D'-2 ' @2?' 'E'-2-5F(' @'-A' '-- 5' 4DD4?'-'4&(' +C' 2 ' -A5' 4-A51' :'-'5?' '&' 2?-' 5ℕ &4-'?4' '&' 12G4&(' @A4?5' D54D 5' @515' -44' E*:A' 2-B -2:A5F' -4' -A5'1' '&?-'-*-'4&?' -4' :4&?5&-' -4' '-(' -' ' A21 5?' 6'1?-' E2F5' 42-A' '&' D51?4&' -4' 15?D5:-' -A5' 2@?' 2&F' '+51-'5?' 46' -A5' 152 E ')

' -' +5:2E5 D51E2&5&-C ?4 '&' -A5 64 4@'&G 15'G& 46' A' 'D ' 5E2&21'4 1*F'-4(-4E' ''' D'

6 21+2,2' D5&5-12-5?' '&-4 -A5 15E4-5?-' F5D-A? 46 D2&'?A A'?-41C 641' 2& 2*-A41'-C 641' A21 5?'? :2'E' 5' :2& 6'&F' &4&5 +5--51(A4@5$51(-A2& -A5 5J2ED 5? 46 DA4&?4 ' 2&F 51F'&2&F ℕ -A5 641E51' 46 @),4E *?5F 641:5(2&F' -A5 2--51' 4+-2'&5F' -A5 :14@& +C' -A5 $4B *&-21C :5??'4& 46 A'? E4-A51' '? 21G*E5&-('-' '? :521(15?-? E*:A ?-14&G51' 4& 5JD5F'5&:C' -A2& D15:5F5&-' &2 5?(' 26'4 < < (:2D' J' -' 4E5L(5 5+*? 5?-'?(64 ' < <(5-' ?5M > 21+2,2 (&.

' ' Z =S

A5' 2?-' '2&' 21'?-4:12:C(' '-' E 2C' +5' +5 '5$5F(' F'F' &4-' E *:A' 15 '?A' -A5' &5@' C4H5' 'E D4?5F' 4&' -A5E' +C' -A5'1' D1'5?- C' 15G5&-' &' 4&5' 4::2?'4&(' '-' '?' ?2'F(' -A5C' @5&-' '&' 2' +4FC' 2&F' F5E2&F5F' 46'Z'E5&5?' +C' @A2-' D4@51?' A5' A5 F' -A5' G4$51&E5&-' ?4' 2+?4 *-5 C' 5' 1565115F(' -A5E' 641' 2&?@51' -4' 51F'&2&F0?' -5?-2B E5&-' 2&F' A21 5?0? 5--51' ?' -A5C' 4+,5:-5F' -4' -A5?5(' A5' 5F' -A5E' -4' 2' @'&F4@' 46' -A5' 2D21-E5&-(' 2&F' ?A4@5F' -A5E' 2' D21H' 46' 21-' 51C' +5 4@(' 5J: 2'EB '&G(' 2-' -A5' ?2E5' -'E5(' R' A515' 215' EC' :15F5&-'2 ?(' -A5&' PK' A5' ?-41C' '?' :A212:-51'?-':N' +*-(' -A4*GA' 46-5&' 15D52-5F(' E*?-' +5' 2FE'--5F' -4' ?-2&F' 4&' ? 5&F51' 2*-A41'-C 9

&5' 46' -A5' 15G5&-0?' 6'1?-' 2:-?' @2?' -A5' 62E4*?' 41F'&2&:5(' 5&:4*12G'&G' -A5' +*1G5??5?(' +C' '+512' 15@21F?(' -4' 5&14' -A5E?5 $5?' '&-4' :4ED2&'5?(' 2&F' ?*+E'-' -4' 15G* 21' E' '-21C' -12'&'&G' 2-' ?-2-5F' ?52B ?4&?' A5' &4+ 5?' ?2@' -A5(4D512-'4&' 46'-A'?' E52?*15' -44' @5 ' &4-' -4' *?5' 2 ' -A5'1' 5661-?' -4' :4*&-512:-' '-

$ ' '$ '2@2B'&$-'#J A MJ#' 0 ' $0 ' ?#' *# " ' $># "' A $ K$' 6# #$ ' +' #' U ?' G$ /' ?# "'0 ' ?$' #0'##' &$-'## A + ' $ ' ?$' ' $+' ?' - #/' *' ?' /' $" ' #0'#' &$-'#' J### A' $ ##$' 0 ' G# ?%V' ' ' $ > ' - ' -# ' -# ' H#+ 'G$' # ?' $'* ' ' JJ##' J&' &###'A' $ / '$' $' +$/+$' $? "?' ?#' ' -' 6# ' / ' +-' $ ' :' +' K $ ' 0# " $-? ' +$D' ?#+' #' -' @4 + #+ ' ' $ /' + #+ ' I' 0 ' :#/$' / ' H#+ K' ?' ? ' : $# 'G? ' ' ' &$-' J'### A 8 + K' ' 0 ' ' ?' -- #>' #-' *' #KL 8 #' * ' 2@3 A $ K$' 6# L # "' $' -$ $/ J' #' &?$ $& ' ' #$' +'#' #0'##'&$-'#' & / &' - $D' *' H#+ '$' '$ 8 + K*# /' '0 ' 'U', #' ! ' ' '& L $? #>' ?$' ' "$' + ' / # ' + ' ' *$ '$' * ' * ' ?#' >' && /# "' ' ' ' $ /$ ' '*$ ' -$-' 0 ' ?' &$ /# $' $* ' ?#' " V' $# ' ' ' 0 $'$/' G# /' ?#' & / # C &?$-'&JJ#

= ' ' ' Z

&' -A'?' -A5C' ?*::55F5F' 641' 2' -'E5(' 2?' -A5' :21F'&2 ('
@'-A' A'?' *?*2 ' +4 F&5??(' A2F' $5&-*15F' 4&' '-'@'-A4*-('
@2'-'&G' 641' A21 5?0?' ?2&:-'4&(' 2&F' '&' 4DD4?'-'4&'-4'
E4?-' 46'-A5' :4*&:' ' A5' 15?4 *-5' ?D'1'-' 46' -A5'
E'&'?-51(' A4@5$51(' 5$5&-*2 C' -1'*EDA5F' 4$51' 2 '
15?'?-2&:5(' 2&F' 2' &2-'4&2 ' :41D?' @2?' 41G2&'L5F(' :4EB
D5-5&-(' *&F51' D14D51' G*'F2&:5(' -4' D14-5:-' -A5' '+51B
-'5?' 46'-A5' D54D 5(' +*-' @A':A' *&641-*&2-5 C' @2?' * -'B
E2-5 C' F5?-'&5F' -4' +5' -*1&5F' 2G2'&?-' -A5E 9

1E5F' @'-A' -A'?' ?-14&G' DAC?':2 ' 641:5(' -A5' :21F'B
&2 ' &4@' D14,5:-5F' -A5' +4 F5?-' ?:A5E5?' 46' 15641E('
5?D5:'2 C' '&' -A5' 6'&2&:5?(' @A':A' A2F' 62 5&' '&-4'
?4E5' F'?41F51' '&' -A5' 2--51' F2C?' 46' 51F'&2&F(' 5'
E2F5' 2' ?-1':-' '&M*'?'-'4&' '&-4' -A5' 6*&F?' 46' -A5' E' 'B
-21C' 41F51?(' '&' @A':A' -A515' A2F' +55&' E*:A' @2?-5'
2&F' E'?2DD14D1'2-'4&'N A5'?*DD15??5F' 2 ' ?*D516 *4*?'
466':5?' '&' -A5' ?-2-5(' 15-15&:A5F' 5J:5??'$5'?2 21'5?(' 2&F'
:*-' ?A41-' -A5' D5&?'4&?' G12&-5F' +C' 51F'&2&F' 2&F'
?2+5 2(' @A':A' A5' :4&-5&F5F' ?A4* F' F5-51E'&5' @'-A'
-A5'1' '$5?' ! &641-*&2-5 C(' -A5' ?-2-5' @2?' &4-' E2-5B
1'2 C' +5&56'-5F' +C' -A5?5' 5:4&4E':2 ' 2112&G5E5&-?('
?'&:5' -A5' G152-51' D21-' 46'@A2-' @2?' -A*?' ?2$5F' @2?'
F12@&' 466' -4' ?*DD C' -A5' @2?-5' 2&F' :*D'F'-C' 46' -A5'
5E'?A' :4*1-(' @A4' F52 -' @'-A' D2'&' @'-A' 2 ' -A5'
E51:' 5??' 12D2:'-C' -A2-' :4* F' +5' ?A4@&' -4' 2' :4&B
M*515F' D14$'&:5 P

1' $ 0$!$ ' $ ' '$## * '2@5'A '# / ' ; # & $" =
2@2B' &$-' J###ZZZ ; # $ # $ $ '
&? >- ' #0' #'' &$-' ' A' *'8 + K' ' 0 ' 8 # '
+- ' 6# '/ ' '&?$-' * '2)(' ' , A 0 ':#/$'/ '
HH: A 8 + K' ' 0 ' 8 # H#+ K' &$-' J'### A $ 0$!$

A5' 6415'G&' 2FE'&'?-12-'4&' 46' -A5' 15G5&-' F'?B D 2C5F' -A5' ?2E5' :4*12G5' 2&F' $'G4*1% 21?5&2 ?' @515'U 5?-2+ '?A5F' '&' -A5' ?4*-A51&' E21'-'E5' -4@&?(2&F' 2' &*E514*?' 6 55-' @2?' 5M*'DD5F' '&' -A5' 5F'-5112&52&(2G2'&?-' -A5' 21+21C' :41?2'1?N 2' 21G5' 641:5' @2?' ?5&-' '&-4' 2$2115(@A':A' F5652-5F' 2&' '&$2F'&G' 21EC' 46' 15&:A(2&F' -A5' :21F'&2' 64 4@5F' *D' -A5' + 4@' +C' F5E4 '?A'&G' -A5' D1'&:'D2' 641-15??5?(46' -A5' H'&GB F4E' N' 2' D15:2*-'4&21C' E52?*15(-4' @A':A('&' 2' D14+2+' '-C(D2'&' 4@5?' -A5' D51E2&5&-' D15?51$2-'4&' 46' A51' :4&M*5?- 9

A5' 15G5&-0?' 5C5' D5&5-12-5F' -4' -A5' 621-A5?-' 'E'-?' 46' -A5' E4&21:AC' 5' ?5&-' 2' :4EE'??'4&' -4' '?D2B &'4 2(-4' '&M*'15' '&-4' 2&F' 2E5 '412-5' -A5' :4&F'-'4&' 46' -A5' &2-'$5?N 2-' -A5' ?2E5' -'E5' A5' 521&5?- C' 4DB D4?5F' /-A4*GA' @'-A4*-' ?*::5??(+5'&G' 4$511* 5F' '&' -A'?' +C' -A5' 5E'?A' :4*&?5 41?(7' -A5' '&-14F*:-'4& 46' &5G14' ? 2$5?' '&-4' -A5' :4 4&'5?(@A':A(A5' D15. F'5-5F(614E' -A5' :A212:-51' 46' -A5' 12:5(E*?-' * -'B E2-5 C' 15?* -' '&' 2' ?51$' 5' @21' -' '?' &55F 5??' -4' 15E21H' A4@' @5' -A5' 5$5&-' A2?' $51'6'5F' -A5' D15.' F':-'4& 6

$ ' ' $ ' 2@2B' :2D J''' k' 21+2,2(&25?('2''4 2@2B' :2D' J' > 5?4&(&25? F5' 2$2112(-4E' $' D' 4F) A' 5-51' 21-C1(D*?' D'?-' 5D'?-' & JJ > b*'&-2&' 2(1:A5-0D5('+' '$' :2D' $ -' 4E5L(5' 5+*?' 5?-'?(64' 2B(' 2B@ A 511512(&F'2? ::'F5&-25?(-4E' #' D' F)3 A' 2?' 2?2?(*$15?N 5F' F5' 4.' 15&-5(-4E' #' -' F45

0 ' $ ' ?' " /' *' H#+ C' 0! & # ' ' ?$' ' 0 ' ?' # #, # >' *' / &# "' ' ' *' + ' ' $' >' # ' L / ' ' #0 $ ' $? ' 6# L >' *' + #&$' ' '#' -' F3@ . ' ' >' #"? /' $ ' * ' G?#&?' ? G ' ' ' *# /' ' ? ' $ ' G$ $ ' # ' 6 $' ? ' $? # >' &# /'0>' ? ' ?# #$.' '# ' 8 + K' '# ' $ >' ? ' G #

= ; ' ' Z

-' '?' @'-A' 5??' ?2-'?62:-'4&' -A2-' @5' E*?-' :4&B -5ED 2-5' A'?' D4 ':C' '&' 15G21F' -4' -A5' &M*'?'-'4&' ?' A52F' 46' -A2-' -1'+*&2 (' A5' 5&641:5F' '-?' 2*-A41'-C' 2&F' D15-5&?'4&?' -4' -A5' *-E4?-% A5' 5J-5&F5F' 2' +12&:A' 46' '-' -4' 12&(' 2&F' 2?4' -4' -A5' 2&21'5?(' 2&F' -A5' 5@' 41F9' &'<<;(' -A5' "' (R (' A2F' 466515F' 51F'&2&F' 2' 21G5' ?*E' 46' E4&5C' -4' -%211C' 4&' -A5' 2$2115?5' @21(' '6' A5' @4* F' :2*?5' -A5' -1'2?' +5641 5' -A2-' -&+*&2 ' -4' +5' :4&F*:-5F' '&' -A5' ?2E5' E2&&51' 2?' '&' 4-A51' :4*1-?(' @A515' -A5' 2::*?51' 2&F' -A5' 5$'F5&:5' @515' :4&614&-5F' 4D5& C' @'-A' -A5' F565&F2&-1' 4' -A'?' 152?4&2+ 5' D5-'-'4&' Z'E5&5?' 4+,5:-5F(' 4&' -A5' @15-:A5F' D 52' -A2-(' '&' -A2-' 5$5&-(' &4&5' @4* F' +5' 64*&F' @' '&G' -4' *&F51B -2H5' -A5' 4F'4*?' +*?'&5??' 46' '&641E51' 5' +2:H5F' A'?' 15E4&?-12&:5' @'-A' ?*:A' 2' '+512 ' F4&2-'$5' 614E' A'?' 4@&' 6*&F?(' 2?' ?*DD '5F' -A5' H'&G0?' 'EE5F'2-5' 5J'G5&:C(' 2&F' 5665:-*2 C' :4?5F' A'?' A521-' 2G2'&?-' -A5' D5-'-'4&51?' A5' 2DD ':2-'4&' @2?' 15&5@5F' '&' << ' +C' -A5' *&641-*&2-5' ?125 '-5?(' @A4' 466515F' 2' '+512 ' ?*DD C' '&' 'H5' E2&&51' -4' A21 5?(' 4&' ?'E' 21' -5112?N' +*-' -A5' D14D4?2 ' -4' @A':A' A'?' 5E'?A' :4*&?5 41?(' @A4' E2C' +5' 5J:*?5F(' 2-' 52?-(' 614E' -A5' 15D142:A' 46' +'G4-1C(' @4* F' A2$5' '&:' '&5F' -A5' C4*&G' E4&21:A(' @2?' 6'&2 C' 15,5:-5F' -A14*GA' -A5' '&-51D4?'B -'4&' 46' Z'E5&5? K6

A5' A'GA.A2&F5F' E52?*15?' 46' -A5' E'&'?-51(' @A' 5

I' ' 6# ' / ' C , #=' ' 6# ' / ' C , ### '
' +'#'&?$-'J'$ ' '' +'#'&?$-'J#'$ '# A 8 + K
' $ $+ ' ' #"# ' , #=' ' 0 '8 # '* ' 23(' 23@'
' #0'##' # '##'&$-' ''A

-A5C' F'?G*?-5F' -A5' 21'?-4:12:C(' G2$5' G152-' * E+12G5' -4' -A5' 52&' 46' 4*$2'&((' @A4' ?2@' A'E?5 6' 15F*:5F' -4' 2' E515' :'DA51' '&' -A5' 2F E'&'?-12-'4&' &' :4&?5U' M*5&:5' 46' A'?' 15D15?5&-2-'4&?(' 2' ?5:4&F(' '2&F' 26-51B @21F?' 2' -A'1F' E'&'?-51' @2?' ?5&-' -4' 2?-' 5(' @'-A' 2*-A41'-C' -4' F'$'F5' -A5' G4$51&E5&-' @'-A' -A5' :21B F'&2 ' +*-' 2 ' -A'?' @2?' 46' '-- 5' 2$2' ' &' 4&5' 4::2?'4&(' -A5' :4.15G5&-?' $5&-*15F' -4' 15+*H5' -A5'1' A2*GA-C' D21-&51(' 2&F' 2??51-' -A5'1' 4@&' F'G&'-C('U C' ?*+?:1'+'&G' -A5'1' &2E5?' 6'1?-' -4' -A5' F5?D2-:A5?(' 2&F' -A5&' ?5&F'&G' -A5E' -4' A'E' 641' A'?' ?'G&2-*15' +*-' Z'E5&5?' :44 C' 41F515F' A'?' ?5:15-21C' -4' -521' -A5' D2D51' '&' D'5:5?(' 2&F' E2H5' 4*-' 2' &5@' 4&5(' @A':A' A5' ?'G&5F(' 2&F' ?5&-' 4*-' @'-A4*-' -A5' D21-':'D2-'4&' 46' A'?' +15-A15&' &F'-A'?' :4*1?5' A5' :4&-'&*5F' F*1'&G' -A5' 15E2'&F51' 46'A'?' 2FE'&'?-12-'4& 9

A5' :21F'&2' &4-' 4& C' 2??*E5F' -A5' ?4 5' 15?D4&?'B +' '-C' 46' -A5' E4?-' 'ED41-2&-' D*+ ':' 2:-?(' +*-(' '&' -A5' 5J5:*-'4&' 46' -A5E' ?5 F4E' :4&F5?:5&F5F' -4' :2:*B 2-5' -A5' 4+?-2: 5?' 41' -A5' 4FF?' 2112C5F' 2G2'&?-' A'E' 5' @2?' -A*?' +14*GA-' '&-4' :4 '?'4&(' 2-' -A5' ?2E5' -'E5(' @'-A' -A155' 46' -A5' E4?-' D4@516*' G12&F55?' 46

I' $ 0$!$' $ ' '$##' ' "#0 '$ ' "#L
&'&$-'##' A 8 + K' ' L + ' " $ #' 9)(')?
0 '8 #'* '235'25E A L ' ; ('+ (')4)(' ?'
0 ' :#/$' /' H#+ K' &$-' (&' #& '- #' ' #- 0#& '
J'### A ' $ >' - ' -#' $+$ #'" 0 +$#' ', #--'
-# JJJ# A '# / '; # & $=' " $ /#'$ #+ ' '#- '$/' /#*#=
" $ ' &$ / +' # $, ''# '* ' =
H' #' - - $' ## V' $>' / +' $ ' +$"#', $+'$/'#+=
$ >'#'$' ' ' $ #$ ' - $ / +' 0 #&#'& , ##' '
&' ?$ ('-?> #&#$ '!' = $--$ $#0 '"$ / R' - ' -#'
' + #$' &#' 6# -$ #$'-$= -#' JJ###

= = ' ' Z

2?-' 5'-' -A5' *H5?' 46' $2' 2&F' &62&-2F4(' 2&F' -A5' 4*&-' 46' !15&2' 4&' 5F14' '14&(' -A5' ?4&' 46' -A5' 2--51(' @'-A' ?5$512' 4-A51' C4*&G' &4+ 5E5&(' A2F' E2B -152-5F' 2&F' 15?'?-5F' -A5' 14C2' 466':51?' @A' 5' '&' -A5' F'?:A21G5' 46' -A5'1' F*-C' -A5C' -A5&' -44H' 156*G5' '&' -A5' '-- 5' -4@&' 46' ' 2612-2(' @A':A' -A5C' 641-'6'5F' 2&F' D15D215F' 641' 2' F565&:5' A5' :21F'&2 (' @'-A4*-' A5?'-2-'4&(' E*?-515F' ?5$512' -A4*?2&F' 46'-A5' &2-'4&2' E' '-'2(' 2&F(' '&$5?-'&G' -A5' D 2:5(' ?5-' '-' 4&' 6'15(' 2&F' F5 '+512-5 C' 12?5F' '-' -4' -A5' G14*&F' A5' 15612:B -41C' &4+ 5?(' ?-1*:H' @'-A' :4&?-51&2-'4&(' ?*+E'--5F' A5'1' 61'5&F?' '&-51:5F5F' 641' -A5E' '&' -A5' E4?-' A*EB + 5' E2&&51'N' 2&F' -A5' :21F'&2 (' @A4?5' 46-C' ?D'1'-' F'?B F2'&5F' -4' -12ED 5' 4&' 2'62 5&' 645(' ?A4@5F' A'?' *?*2' : 5E5&:C' +C' ?4 ':'-'&G' -A5'1' D21F4&' 614E' -A5' H'&G 9'

-' &5'-A51' -A5' -2 5&-?' &41' 2-A41'-C' 46' Z'E5&5?(' '-' @2?' 5$'F5&-(' :4* F' E*:A' 4&G51' E2'&-2'&' ?*+B 41F'&2-'4&' 2E4&G' -A5' D54D 5(' 5J2?D512-5F' +C' -A5' ?A2E5 5??' 5J-41-'4&?' 46' -A5' 5E'&G?(' 2&F' -A5' '-- 5' '&-515?-' ?A4@&' 641' -A5E' +C' -A5'1' &5@' ?4$515'G&' A5' E4?-' :4&?'F512+ 5' 466':5?' '&' :A*1:A' 2&F' ?-2-5' @515' D*-' *D' -4' ?2 5'N' 2&F' -A5' H'&GF4E' @2?' F12'&5F' 46' '-?' 6*&F?' +C' -A5' 21G5' 15E'--2&:5?' :4&-'&*2 C' E2F5(' 4&' 4&5' D15-5J-' 41' 2&4-A51(' -4' 2&F51?' ' -A'?' +14*GA-' 4F'*E(' *&F5?51$5F' '&F55F(' 4&' -A5' :21B F'&2 0?' G4$51&E5&-'N6' 641U-A515' '?' 2+*&F2&-' 5$'.

I' 8 + K' ' 0 ' 8 # ' b*'&:*2G5&2?(' >' 2&F4$2(* '253AFE2A' ' $ > ' '?-(F5' ED' 2'F4? ' -4E' '' - ' -# ' -# ' J'##' JJJ#' ' D' J&' A' $ 0$!$ ' $ ' ' -' &' 2' 5--51' -4 21'2&4($ '2@2)' $-'###' '# A '# / 21-C1'?D52H?' 46'-A5' 21G5'?*E?

Z =

F5&:5(-A2-' +4-A' A5' 2&F' -A5' :4*&:'' 15E4&?-12-5F' '& -A5' +4 F5?-' E2&&51' 4&' -A5?5' 5&41E'-'5?N' @A' 5' -A5C' 5&F52$4*15F' -4' '&?D'15' &4+ 51' ?5&-'E5&-?' '& A21 5?0?' +4?4E(+C' 15:2 '&G' -A5' @'?5"2&F' D2-1'4-':' 2FE'&'?-12-'4&' 46' A'?' G12&FD215&-? 9' A5' D54D 5('&' -A5' E52&' @A' 5(4*-12G5F' +C' -A5?5' 5J:5??5?(2&F' F5?D2'1'&G' 46' 15F15??' 614E' 2' A'GA51' M*21-51(4*F C' :2E4*15F' 641' 2' :4&$4:2-'4&' 46' :41-5?(-A2-' -A5C' E'GA-' -2H5' -A5' E2--51' '&-4' -A5'1' 4@&' A2&F?' A5' :21F'&2' 5$2F5F' -A'?' 2?' 4&G' 2?' D4??'+5' 5' @2?' &5$51' 2' 61'5&F' -4' D4D* 21' 2??5E+ '5?(E*:A' 5??' '& -A5' D15?5&-' '&6 2E5F' ?-2-5' 46' D*+ ':' 655 '&G(2&F' '& -A5' 2+?5&:5' 46'-A5' ?4$515'G&' 5' @2?' E415' 2&J'4*?' 641' A'?' 15-*1&' -A2&' 2&C' 4-A51' '&F'$'F*2 (D14+2+ C('& -A5' H'&GF4E' 12$5F' +C' -A5' 21'?-4:12:C' 2-' A4E5(-A@21-5F' '&' 5$51C' 62$4*1'-5' E52?*15' +C' -A5' 5EB '&G?' 2+142F(@'-A' 2&' '&,*15F('&F'G&2&-' D54D 5' -4

U'$0'? &'" 0 +$ '$/' ' '+# =' 3' 0'-$ $ / '& $ #'- J=' V' - ' -# ' -# ' JJ'#.' '$ 0 , ' -# ' '?#' $L ##$'& = - / '?' - $D' #'$'+ ' $ &$ #& ' 9 ' ' 'H#+ K' $ /#=' $#'" 0 +$ ' ? $#J ' $/' "$' $ +# / '& $& '$=' '# '1' I' ZI I' I' 8 $&#$#' & $ # $&& **# /# $0 ' ' $' J-#=' $0# ' $ # $V' -# '&'#.' +' + '&$ ' ' ? '#'#' '#/ ' ?' &$ /# $0' " ' L + ' G$' ' $'$' ' '? ' $ >0' $ ' 8 + K' "" ' $' ?' $ ' ?$' ?#' $$>' NG$'&#-- /' **'#' ?' " $

&?+ 'G?#&?' ?' $/+# ' G$'$' '>?$ /'&$ ' ' L 0'8 #'*'2)).' $ >' ?G' 'G$' ' '$' J $'$L "$' & +#$' *' ?'&$ /# $' $ /' '+$>' #+$"# ' + &?' + ' & /# $0' $ ' ?$' ?$' $ #" /' *' ?#' /# " ' NG#?'?#+' G I' '$' '# ' $ 0$!$' & $# # "' ?#' ? ' #0 ' '?'# # '/ $/' $=' ' '$?' 2@2)' &$-'#'.' ?$ '+#"?' ?$' '*' /' $' $ #/ ' ' ?' - # '*'?#' +#?' >& -?$ ' ' ?'*$# ?L * '& + '*'?#' $ ##$'+#L #

= ' ' Z

:4&-14 (' 2&F' 4DD15??5F("E 4154$51(' +C' '&6'1E'-'5?' 2&F' C521?(' e$5-6' A'?' ?-51&' '&6 5J'+ 5' ?D'1'-' :4* F' ?:21:5 C' ?*?-2'&' A'E' *&F51' 2' +*1F5&' -44' G1'5$4*?(' '&' -A5?5' :'1:*E?-2&:5?(' 641(2&C' ?*+,5:-9

-' 5&G-A' -A59C4*&G' E4&21:A(' A2$'&G' E2F5' 2 ' ,D15 'E'& 1C' 2112&G5E5&-?(' D15D215F(' -A4*GA' ?-' '&' 4DD4?'-'4&' -4' -A5' @'?A5?' 46' A'?' :4*1-'51?(' -4' 5E+21H' 641' A'?(' D2&'?A' F4E'&'4&?' 15$'4*?C' -4' -A'?(' 4&' -A5' < -A' 46U *G*?-' < < (' -A5' 15&:A' 2&F' D2&'?A' D5&'D4-5&-'21''5?' ?'G&5F'(2' -152-C' 46' D52:5' 2-' 4C4&' A5U' D1'&:'D2' 21-':5' ?-'D* 2-5F0-A5`E211'2G5' 46' A21 5?' -4' -A5' F2*GA-51' 46' 12&:'?' -A5' '1?-(' @A4' @2?'-4' :5F5(U2?' A51(UMN@1C(' -A5' 15&:A' :2'E?' 4&' 2D 5?' A5' E211'2G5(' '&F55F(' &5$51' -44H' D2:5'N' +*-' -A5' -152-C' '-?5 6' E2C' +5' :4&?'F515F' 2U' 6' '2 C' 2F,*?-'&G' -A5' A4?-' 5' 15 2-'4&?' @A':A' A2F' ?*+?'?-5F(' F*1'&G' ?4' E2&C' C521?' 46' 51F'&2&F0?' 15'G&(' @'-A' -A5' 1'$2' E4'U21:AC' 46' 12&:5(' 2&F' 2?' :4?'&G' -A5' 4&G' ?51'5?' DUU@21?' @A':A' A2F' G14@&' 4*-' 46' -A5' 52G*5' 46' 2E+12C 6

&' -A5'(< -A' 46' 5D-5E+51' < < (' A21 5?' 2&F5F' 2-' ' 2$':'4?2(' '&' -A5' ?-*1'2?' Z'E5&5?' 2-' -A'?

]' ' $ >' - ' -# ' -# ' &##'A'8 + K' ' 0 ' 8 # '* '25(A 0 ':#/$' /'H#+ K'&$-'J'### $ >'#'$' ' G # ' ! '0* ' ?' D# "(' $ /# "' #& ' ?'&$ /# $(' G' $ ' *'? $?' $ /' -# # ' U' $ /#=' $#' " 0 +$ ' $ # # * 0 #=' 0 ' $ " $' $< & '$, '$< &' &#/#'$'#

' '* ' /# '# # ' /#&# $ +$ ' ' & " $#' ?$=' ! < #- ' "#'$/' +'$** & ' $'#/# #+' / #/ $ ' '#/ ' #' # ' " ' ' # ' - ' &0 /$' 6# -$ +' + / $# $&' "#V' -# ' J&'### ' $ $ ' #- +$#' $ =' M$# ' +'#'-' 4'A' + ' -' #- +$#, ' +' #'' -$ '#' '2EB

-'E5' 2C' ' ' 2-' -A5' 12&:'?:2&' E4&2?-5'C' 46' G*'B 512(' &521' 12&F2' 4&' -A5' 4!14' A5' G44F' -'F'&G?' 46' -A5' 14C2' 2&F'&G' 4D512-5F0 'H5' 2' :41F'2' 4&' A'?' ?D'1'-?(' 2&F' A5' '&?-2&- C' F5?D2-:A5F(' 5X\-51?' -4' -A5' C4*&G' E4&21:A(' 6' 5F' @'-A' @A4U5?FE5' :4*' 5' 2?' -4' -A5' :4&F*:-' A5' ?A4* F' D*1?*5' '&U 4 F51'U4' 4&:'B '2-5' -A5' 2665:-'4&?' 46' -A5' D54D 5' " 5' 15:5'$5F' 2-' -A5' ?2E5' -'E5' E5??2G5?' 614E' -A5' H'&G(' :4*:A5F' '&' -A5' E4?-' G'02:'4*?' -51E?(' 2&F' 5JD15??'&GU"U-A5' '$5 '5?-' '&-515?-' '&' A'?' 15?-412-'4&' -4' A52 -AC

A5' 5E'&G?' '&' A21 5?0?' ?*'-5(' A4@5$51(' 44H5F' @'-A' G152-' 2DD15A5&?'4&' -4' A-?' E55-'&G' @U-A' -A5' :21F'&2' A5C' A2F' +55&' :4&-5&-' -A2-0 -A5' 2--51' ?A4* F' 1* 5' -A5' ?-2-5(' @AF&' A'?'U211A' @2?0' &55F5F' -4' :&1+' -A95' 2?-' '2&' 21'?-4:12:C\' +*-' -A5C' :152F5F' -A5' 2?:5&F5&:C' 46' A'?' D4@516*' E'&F' 4$51' -A5'1' C4*&G' ?4$515'G&(' @A5&' +14*GA-' '&-4' D51?4&2' :4&B -2:-' @'-A' A'E' A5C' 15-21F5F' -A'?' 5'U&-(' +C' H55DB '&G' A21 5?' '&' -A5' &41-A' 2?' 4&G' 2?' D4??'+ 5' &' -A5' E52&' -'E5(' -A5C' 5&F52$4*15F' -4' 2 '5&2-5' A'?' 15G21F?' 614E' -A5' E'&'?-51' +C' 5J2GG512-5F' 15D41-?' 46' A'?' 21+'-121C' :4&F*:-' 2&F' -5ED51(' 15&F515F' E415' E414?5' +C' -A5' D55$'?A&5??' 46' 2G5' A21,5?' ?A4@5F' 2'62:' '-C' -4' +5' F'15:-5F' +C' -A4?5' 214*&F' T'E' '&' 521 C' C521?(' @A':A' G2$5' '-- 5' 2*G*1C' 46' -A5' G152-&5??' -4' @A':A' A5' 26-51@21F?' 14?5'9

C' -A5' D51?*2?'4&?' 46' A'?' 5$' ' :4*&?5 41?(' A5' 2F.

I' $ 0$!$' $ ' '$ ' :#$'/# $ 'V'-'2F A 8 + K' 2@2)' &$-'#J A + ' $ ' ' 0 ' 8 #' * ' 2' A' /' $" ' #0'#' &$-'# A $' $ / '$' 6# '/' +-' $ ' :#$'/# $ ' :'* '(4 A & :' +' ' -'34

: ' F' Q

= S

F15??5F -A2- E5E412+ 5 5--51 -4 Z'E5&5?(@A':A '? *&E2-:A5F(5$5& '& :4*1- 2&&2 ?(641 :44 2&F +2?5 '&G12-'-*F5 5 -A2&H5F -A5 15G5&- 641 2 A'? D2?- ?51$':5?(&2E5F 2 D2:5 641 2 D51?4&2 '&B -51$'5@ @'-A A'E(@A515 A5 E'GA- 4+-2'& -A5 +5&5. 6'- 46 A'?"9:4*&?5 ? 641 A'? 4@& :4&F*:- 2&F -A5 G4B $51&E5&- 46 -A5 H'&GF4E 26-51 @A':A A5 @4* F +5 2 4@5F -4 15-'15 -4 A'? F'4:5?5(2&F ?55H 614E 52$5& -A2- 15@21F @A':A 52$5& 2 4&5 :4* F 2F5B M*2-5 C +5?-4@ 9

*:A @2? -A5 -5&41 46 -A'? :4 F.+ 44F5F 5D'?- 5(@A':A('& -A5 2&G*2G5 46 E415 -A2& 4&5 @1'-51(H' 5F -A5 :21F'&2 A'?(A4@5$51('? ?-2-'&G -A5 E2--51 -44 ?-14&G C A5 ?D'1- 46 Z'E5&5? @2? 46 -44 ?-51& 2 ?-*66 -4 +5 ?4 52?' C 5J-'&G*'?A5F +C -A5 +152-A 46 14C2 F'?D52?*15 "P" 5 @2?('&F55F(F55D C E4$5F +C -A5 F5?51-'4& 46 -A5 ?4$515'G& @A4E A5 A2F ?51$5F ?4 62'-A6* C 2&F -A5 5J:'-5E5&- @A':A '- 4::2?'4&5F +14*GA- 4& 2 15-*1& 46 A'? 65$51(2:B :41F'&G -4 21+2,2 ('& 6* 641:5 *- 2&J'5-C 2&F F'?52?5 A2F 2 152FC F4&5 -A51 @41H *D4& A'? 4&:5 A21FC :4&?-'-*-'4& 2&F -A'? *&G12-56* 2:- :4* F 4& C

$ 0$!$ $ 0# /# " ? *$ *$ + / - $ A 8 + K 0 8 - #/#& ? #/ $ * # * F2@ A $ / '$ 6# H ? +# / ?$ *# > -$ L / + - $: + # - #& # " J # " # ? / 0> $ 3(#& V

X U #0 , # ? * G *$ & # #& ? G * $ &$ / $ + R $> +#"? $ G - *$ $ $?$ $ &&$ / $ + - >< $ G # *$D# " 0 ?& $ #+$L G? # ? +# $ "# # G /0 ?$ / - ' ' $ # # / / $ / $ > & & J# 0 G H# + K - (( ) . > $L ? G ' ?$?$ *$ *# +

?51$5' -4' @52&' A'E' E415' 5665:-*2 C' 614E' 2' @41 F' -A2-' A5'@2?' ?44&' -4' D21-' @'-A 9

&' 41F51' -4' +5' &521' -A5' H'&G(' A5' A2F' D15$'4*? C' -12&?65115F' A'?' 15?'F5&:5' -4' 42' 5' &4@' -*1&5F' A'?' -A4*GA-?' -4' A'?' 2DD142:A'&G' 5&F' 52-A' E2C' +5' ?*DD4?5F' -4' A2$5' +*-' '-- 5' -51141?' 641' -A5' ?-2-5?B E2&' @A4' '&' A'?' 2?-' E4E5&-?' :4* F' 2$51' I' -A2-' A5' A2F' &5$51' '&-5&-'4&2 C' @14&G5F' 2&C' E2&N' +*-' A2F' 15&F515F' -4' 5$51C' 4&5' A'?' F*5(' @'-A4*-' +5'&G' ?@2C5F(' 2?' 621' 2?' A5' @2?' :4&?:'4*?(' +C' 6521' 41' 2665:B -'4& K' 5-' 21F'&2' ':A5 '5*' 4&' A'?' F52-A+5F' F5B : 215F' -A5' ?2E 5P6

?' 2' 2?-' 2--5ED-(' A5' +5G2&' 2' 5--51' -4' -A5' H'&G' '?' 6'&G51?' 156*?5F(' A4@5$51(' -4' D51641E' -A5'1' 46B 6':5(' 2&F' 26-51' -12:'&G' 2' 65@' '&5?' A5' G2$5' '-' *D

I' U' '$, ' / - /#+# =' R' $>' 8$# / K'/' $ 0$!$' ! '& ' '$&$0' /' $ ' =' '#&# ' "', ' "' $'&$ $' ' $ / $' &#0#'$ $&# '>' + ' &#$' &$ $', ' ' - & '/#$' '/ -$&? V' $ ' '$## '2@2)'&$-'#J .' 8 + K' '$' '" >' *' - # '$/L +# # /' ' ?'&$ /# $'#'$' ' ' 0 ' 8 # '* ' FEB .' ? ' $>'#'$' ' * +' $ / ' ' #' #&=' # $# '6# #, '+ 'H#+ =' .' '# /' #& '$' + ' *' ?#' ?$'# "' 0 ' - # /'0>' ' *'?#' & $ # .'0 ' &?L '* ' ? '# & &' *' ?'# /#L '#/ $' $&& /' G? +' ?' - L $ >'D G' ; # & $" $ ' '/#$' /' H#+ .' - ' *' ?#' D# /' G ' ' #*'#' ? ' /$>' ' / ' & /#'

-- /'0>' '>'& $' '#/ & ' $ >' $ /' $ 0$!$' 0 ?' G# ?' ?' & '$' ?' #+ ' # #+$ ' ' -#&# ' *'* ' - $>

' $ 0$!$' $ ' '$## ' 2@2)'&$-'#J A 8 + K' ' L 0 ' 8 # '* ' F24' F2('A' ; # $ # $' &? >- ' #0'#' ' &$-' '###'A' '# / ' ; # & $" L $ '

U' W' : #/' + '! " ', #- =' & $'0# '+$' & 'P ' '-#'/' ' + '& ' /' + ' & /$+ ' #' /$ ' + ' +# # =' '! ' + ' #' - - ' $ ' &? ', ' '0# ' /' $' #"# ' '& #/' C $ C ' / +$# ' $' - # ' /' ! '#' ' ' & =' '#' C J + ' & # V' P$>' 6# # ' /' # # ' /' $ /#L $' #&? # ' $ # ' 232B .' +'##' -'F2)

;' T' ;

A5 D*1D41- 46 -A5?5 ?55E? -4 A2$5 +55&(-4 15:4EB E5&F A'? *&'$51?'-C 2- :2 F -4 -A5 14C2 D14-5:B -'4& 5 &4@ +5:2E5 @A4 C 4::*D'5F @'-A A'? F5$4-'4&?(2&F E2&'65?-5F ?*:A :4&-1'-'4& 641 A'? 51141?(2&F ?*:A A*E+ 5 :4&6'F5&:5 '& -A5 F'$'&5 E51:C(2? F55D C 2665:-5F 2 D15?5&- & -A'? -12&B M*' 612E5 46 E'&F(2&F '& -A5 D5165:- D4??5??'4& 46 A'? D4@51?(A5 +152-A5F A'? 2?-(4$5E+51 S-A(< < ('& -A5 5'GA-C.6'1?- C521 46 A'? 2G5(2&F -A5 -@5&-C.?5:4&F ?'&:5 A'? 5 5$2-'4& -4 -A5 D1'E2:C A5 2?- @41F? -A2- A5 *--515F @515 -A4?5 46 -A5 ?2 E'?-(@A':A A5 *?5F 615M*5&-C -4 15D52- '& A52 -A(R & -5(4E'&5(?D512$'(K> R & -A55 41F(A2$5 -1*?-5F K

'? +4FC(2112C5F '& A'? D4&-'6':2 14+5?(@2? ?52-5F '& 2 :A2'1 46 ?-2-5(2&F0E* -'-*F5? 46 2 F5B G155? -A14&G5F '&-4 -A5 2,721-E5&- -4 H'?? -A5 A2&F? 2&F 655- - @2? 26-51@21F? -12&?D41-5F -4 :2 2(2&F 2'F '& -A5 :A2D5 46 -A5 &4+ 5 :4 5G5 46 2& F564&?4(515:-5F +C A'E?5 6 '? 4+?5M*'5? @515 :5 5+12-5F @'-A G152- D4ED(:4&-121C -4 A'? 4@& 41F51?(+C 2 -A5 15 'G'4*? 2&F '-5121C 612-51&'-'5? 46 -A5 :'-C N 2&F A'? $'1-*5? :4EE5E412-5F '& 2 6*&512 F'?:4*1?5 +C 2 F4:-41 46 -A5 *&'$51?'-C(@A4(:4&?'F51'&G -A5 F52-A 46 -A5 G44F 2 6'--'&G 4::2?'4& -4 2?A -A5 $':5? 46 -A5 '$'&G(E2F5 -A5 E4?- :2*?B -':2 *?'4& -4 -A5 5E'?A 62$4*1'-5? 46 A21 5?(2&F -A5'1 D5?-' 5&- '&6 *5&:5 4& -A5 :4*&-1C 9

S 0 :#/$ / H#+ K 8 # * F2@A F2) A ; # = &$- J'### A 8 + K 0 $! $ &# >- #0 #' &$-

*:A' @2?' -A5' 5&F' 46' -A'?' 15E21H2+ 5' E2&N' -A5' E4?-' 15E21H2+ 5(' '&' E2&C' 15?D5:-?(' 46' A'?' -'E5' '?' :A212:-51' @2?' 46' -A2-' ?-51&' 2&F' 46-C' :2?-' @A':A' ?55E?' -4' 1'?5' 2+4$5' -A5' 41F'&21C' @2&-?' 2&F' @52H&5??5?' 46' A*E2&'-C' '?' G5&'*?(' 46' -A5' ?5$51B 5?-' 41F51(' 'H5' 2&-50?' 41' ':A25' &G5 40?' '&' -A5' 15G'4&?' 46' 62&:C(' 'ED15??5?' *?' @'-A' 'F52?' 46' D4@51(' -A2-' 5J:'-5' 2FE'12-'4&' 2H'&' -4' -51141' '?' 5&B -51D1'?5?(' 2?' @5' A2$5' ?55&(' @515' 46' -A5' +4 F5?-' :A212:-51N' A'?' 5J5:*-'4&' 46' -A5E' 5M*2 C' +4 F' 5' F'?F2'&5F' -4' @44' 641-*&5' +C' 2&C' 46' -A4?5' ?46-' 2&F' D '2&-' 21-?' @A':A' 215' 46-5&' -A5' E4?-' 5665:-*2 ' 5' D*1?*5F' A'?' 5&F?' +C' -A5' E4?-' F'15:-' E52&?' &' -A'?' @2C' A5' 615M*5&-C' E*-'D '5F' F'66':*-'5?N' +*-' F'66':*-'5?' ?55E5F' -4' A2$5' 2' :A21E' 641' A'E(' +C' -A5' 4DD41-*&'-C' -A5C' 2664 1F5F' 46' F'?D 2C'&G' -A5' 5&51G'5?' 46' A'?' ?4*

'-A' -A5?5' M*2 '-'5?' A5' :4E+'&5F' 2' $51?2-' '-C' 46' -2 5&-' *?*2 C' 64*&F' 4& C' '&' ?46-51' 2&F' E415' 6 5J'B + 5' :A212:-51?' A4*GA' +15F' '&' -A5' :4'?-51(' A5' F'?-'&G*'?A5F' A'E?5 6' +4-A' '&' -A5' :2+'&5-' 2&F' -A5' :2ED N' 641' -A5' 2--51(' '&F55F(' ?4' 15D*G&2&-' -4' A'?

J## A MJ'< G?' , ' $ $6 ' $ ' > G# A $ 0$!$ ' $-' ' ' $ ' 2@2)' &$-' #J< G?' /$ ' ?' &$ /# $(' / $?' & +0 ' 3 ?' # ' G?#&?' ?' # ' * G /' 0>' $ J$?' * G# "' -# $-?' *' ' " $' + # ' G$' # & #0 /' ' ?#' - &? ' & +- /' 0>' ?' $ /' P ?' : "$ $' # ' ?#' > " ' /$>

U' /#/ $+' + #' $ &# -' & ' " $ / ' >& + ' / ' # ' J#" ' &' " ' $ & -?$" $ J $+' ! J#' $&&? ' "$ $+, ' "$ ' $ ' / J'- $ ' &$ -' /# , ' -$; # ' '# ' + $' ! & +' ' /#$/ +$' & & ' +' +#?# " $ # -$-' #' 6 - #$V

;

15G* 21 D1465??'4&(A5 A2F 2 &2-*12 G5&'*?(2::41FB '&G -4 -A5 -5?-'E4&C 46 A'? +'4G12DA51M 2&F A5 5$'&:5F A'? 15 '?A 641 '- +C F5: 21'&G(-A2- R -A5 ?E5 46 G*&D4@F51 @2? E415 G12-56* -4 A'E -A2& -A5 ?@55-5?- D516*E5 46 12+'2PK9 & 5$51C ?'-*2B -'4&(A4@5$51(A5 5JA'+'-5F -A5 ?-2ED 46 A'? D5:*B '21 :2 '&GM 2&F -A5 ?-51& '&52E5&-? 46 -A5 E4&H @515 &5$51 @A4 C :4&:52 5F *&F51 -A5 E2?H 46 -A5 ?-2-5?E2&(41 -A5 $'?41 46 -A5 @211'41 5 A2F 2 6* E52?*15 46 -A5 15 'G'4*? +'G4-1C @A':A +5 4&GB 5F -4 -A5 2G5M 2&F A5 A2F E52&:A4 C ?:4D5 641 F'?D 2C'&G '-(2? :A'56 46 -A2- F152F -1'+*&2 4$51 @A':A A5 D15?'F5F F*1'&G -A5 2?- -5& C521? 46 A'? '65.-

5 :211'5F -A5 21+'-121C 'F52? 46 A'? D1465??'4& '&-4 D4 '-':2 '65 '? 15G5&:C @2? :4&F*:-5F 4& -A5 D1'&:'D 5? 46 2 E' '-21C F5?D4-'?E - @2? A'? E2J'E(-A2- 992 D1'&:5 E*?- 15 C E2'& C 4& A'? 21EC 641 ?55E'&G -A5 15?D5:- 2&F 4+5F'5&:5 46 A'? ?*+,5:-? KU - '? -1*5 A5 A2F -4 F52 @'-A 2 E21.

I 8 + K 0 8 # &?$- H $ ' < + # ' &?$- * 2BE A 0 :#/$ / H#= J '#. / / ! #& + K &$- J'## A ! /G? G?$ # $ >" / # ? &?$L &$ / 0 V J&$#+ 8 K$ / $& *? #'$" + $0L '# / U ?$ - G/ $"$# >' & ?# > $"$# ? # *#/ # & ? ?$ /# *$ $ #&# + G?#&? /_V ; # & $" $ + $ $ / # "" ?# - # / H#+ = # ? 0 * $ > R' $ $& /$+ $# V + $ " > ? ?'+#/ $ " $" *' = !U $ +?$0 $ #$ $ # + ? +$ # + = *' + ?$ F@EE # /#'#L - #$ $ # +' $ # # '# / $? ? $D $ /' $ > *$& $ $ $/?#0# $; $ - @E EEE ? - # ?+ % & $**# +$ 0$ + 6# / # , # # # + #

-'2 ' 2&F' 62:-'4*?' &4+' '-C(' 2&F' -A5' 5&F' @A':A' A5' D14D4?5F' @2?' -4' :*1+' -A5'1' ':5&-'4*?&5??(' 2&F' 5&B 641:5' -A5' 5M*'-2+ 5' 2FE'&'?-12-'4&' 46',*?-':5 +*-(' '&' 2::4ED '?A'&G' -A'?(' A5 ' ?A4@5F' '-- 5' 15G21F' -4' -A5' :4&?-'-*-'4&(' 41' -4' D1'$2-5' 1'GA-?' '?' 6'1?-' 2:-(' -A5' D14: 2'E'&G' 46' A21 5?' H'&G(' @2?' '&' 4D5&' :4&B -5ED-' 46'-A5' *?2G5?' 2&F' 1'GA-?' 46'-A5' &2-'4&' 5' 5$2F5F' -A5' *1G5&-' F5E2&F?' 46' -A5' 2?-' '2&?' 641' 2' :4&$4:2-'4&' 46':41-5?' 641' '-' @2?' A'?' 4D'&'4&(' '-A2-' 6155F4E' 46' ?D55:A(' 5?D5:'2 C' '&' 15G21F' -4' -A5'1' 4@&' G1'5$2&:5?(' E2F5' -A5' D54D 5' '&?4 5&-' 2&F' '115$515&-' -4' -A5'1' 1* 51?K9' A5' D54D 5(' 46' :4*1?5(' A2F' &4' $4':5' '&' -A5' E52?*15?' @A':A' '&$4 $5F' -A5'1' E4?-' 'ED41-2&-' '&-515?-?' A'?' @A4 5' D4 ':C(6' '&F55F(' @2?' -4' 5J2 -' -A5' 14C2 ' D1514G2-'$5' 2-' -A5' 5JD5&?5' 46"

, $+' - +&#- +' J #' - -' - #' * +#/# #' $ ' #' ' -' #$'* # ' # #& +-$ $ ' +#-' # +' J &# ' $, ' + #0 ' 0 # # + #' $/' +$ +' -$ $ # R' 8 + K' ' 0 ' 8 #'* ' 5@.' 7 ' +$>' G ' $-- >' ' ?'&$ /# $'G?$' $ ' ' $? ' &$ '$-- # /' ' +=

!5

R' 125-*'-' 21E2' -4G?5' ?5F' D2:5E' 21E2-*'? 2E2$'-K A21?2 '2(' '+' 'J

' R' * ?(' 5&'E' 15' E2G'? D4D* 4?' '&?4 5?:515(' 5-' '115$515&' -'2E' 4E&5E' 5JA'+515(' M*2E' :*E' '+51-2-5E" 4M*5&F' &2:-' ?*&-(5-' D14 +'F'&5' ?*2?' U2 G' ,2:-2&-' M*51'E4&'2?'K' 4E5L' M*4-5?' -A5' 2&G*2G5' 46' Z'E5. ' # ' ?# ' & - / &' G# ?' ?$ ' ' 0 ' 8 # '* ' 25(

6' $'5F-4 E2H5?' 2' 156 5:-'4&(?A4@'&G -A2-' A5' :4&:5'$5F' -A5' :21F'&2 0?D4 ':C+5--51-A2&' E4?-' 46A'?'+'4G12DA51?' 5'?-2-5?'-A2-' -A5' $21'4*?' 'EE*&'-'5?(2&F' -A5' E' '-21C 41G2&'L2-'4&(@A':A' A5' G2$5-4 -A5' -4@&?(5&2+ 5F' -A5 E' -4 12'?5' -A5' '&?*115:-'4&(H&4@&' 2?' -A5' @21' 46' -A5' R' :4E*&'F2:' F5?(K 2-' -A5+5G'&&'&G46' A21 5?'? 15'G&' *-' A5 1'GA-C' :4&?'F51?' -A'?' 2?' 4&C' 2&' '&F'15:-' :4&?5B M*5&:5 46A'?' D4 ':C(' @A':A' E2F5' *?5' 46' -A5' D4D* 21' 21E' 4&C' -4 +152H F-4@&' -A5' D4@51' 46' -A5' &4+5?(' 2&F' 5?-2+ '?A' -A5' ?*D15B E2:C' 46' -A5' :14@&' b*'&:*2G5:' &2?(

=

-A5 '&651'41 41F51? 46 -A5 ?-2-5 2&F A'? 15G5&:C(?A41- 2? '- @2?(2&F'A'GA C +5&56':'2 -4 -A5 :4*&-1C '& E2&C 15?D5:-?(E*?- +5 :4&?'F515F 2? 4D5&'&G -A5 @2C -4 -A2- :21551 46 F5?D4-'?E @A':A -A5 *?-1'2&62E'C64 4@5F *D @'-A ?*:A A21F.A521-5F :4&?-2&:C

-(@A' 5 @5 :4&F5E& -A5 D4 '-':?(@5 :2&&4- +- 15?D5:- -A5 D1'&:'D 5? 46 -A5 E2& 4@5$51 5114&54*? A'? :4&F*:- '& 4*1 5C5?(A5 @2? G*'F5F +C A'? ?5&?5 46 F*-C - @2? -A'?(2&F -A5 :4&$':B -'4& 46 '- '& -A5 E'&F? 46 4-A51?(@A':A :4&?-'-*-5F -A5 ?5:15- 46 A'? G152- D4@51 '- E2F5 A'E 15:HB 5?? 46 F'6 :*-'5?(2&F 6521 5?? 46 2 D51?4&2 :4&?5B M*5&:5? A5 :4&?:'4*?&5?? 46 -A5 '&-5G1'-C 46 A'? D*1D4?5? 15&F515F A'E('&F55F(-44 *&?:1*D* 4*? 2? -4 -A5 E52&? 46 2--2'&'&G -A5E 5 A5 F A'? 4@&' '65 :A52D('& :4ED21'?4& @'-A -A5 G152- 15B 641E? -A2- A5 A2F 2- A521- 2? '- ?*1D1'?'&G -A2- A5 ?A4* F A4 F 2? 'GA- C -A5 :4&$5&'5&:5 2&F '&-515?-? 46 4-A51?(@A5& -A5C -A@21-5F -A5'1 5J5B :*-'4&0

'? $'5@? @515 12'?5F 621 2+4$5 :4&?'F512-'4&? 46 ?5 6 ? 2 ?-2-5?E2&(A5 'F5&-'6'5F A'E?5 6 @'-A -A5 ?-2-5 2? 2 :A*1:AE2&(@'-A -A5 '&-515?-? 46 A'? 15 'G'4& 5 ?5$515 C D*&'?A5F 5$51C 4665&:5 2G2'&?- -A5?5 A5 2? 6155 C 641G2$5 5$51C D51?4&2 '&,*1C 5 A2F E2&C 15E21H2+ 5 4DD41-*&'-'5? 46 ?A4@'&G -A'? '? 2FE'&'?-12-'4& D14$4H5F &*B E514*? 2ED44&? 2&F '+5 ? 5 F5?D'?5F -A5E(2? -A5 E'?512+ 5 ?4 2:5 46 ?D 55& 2&F F'?:4&-5&-(2&F

&5$51' D51?5:*-5F' -A5'1' 2*-A41?9' &' -A'?' A5' 641E5F' 2&' A4&4*12+ 5' :4&-12?-' -4' 21F'&2 ' ':A5 '5*(' @A4?5' :A212:-51' 2&F' :4&F'-'4&' ?*GG5?-' E2&C' D4'&-?' 15B ?5E+ 2&:5' @'-A' A'?' 4@&

'?' F'?'&-515?-5F&5??' @2?' 6*1-A51' ?A4@&' +C' A'?' E4F5' 46' F'?D5&?'&G' A'?' 21G5' 15$5&*5?' -' @2?' 2E4&G' -A5' D441(' 2&F' 4&' G152-' D*+ ':' 4+,5:-?' 5' +*' -' *D' &4' 62E' C' 5' A2F' +14-A51?' 2&F' &5DA5@?'N +*-' A5' :4&-5&-5F' A'E?5 6' @'-A' E2H'&G' -A5'1' :4&F'B -'4&' :4E641-2+ 5(' @'-A4*-' F'$51-'&G' -4' -A5'1' +5&56'-' -A5' G152-' -1*?-?' :4&6'F5F' -4' A'E' 641' -A5' D*+ ':(6' A5' G152-51' D21-' 46' -A5' 6*&F?' @A':A' A5' 56-' 2-' A'?' F52-A' @2?' ?5-- 5F' 4&' -A5' *&'$51?'-C' 46' :2 2(',N

5' A2F(' A4@5$51(' &4&5' 46' -A2-' D1'F5' @A':A' @4* F' E2H5' A'E' 2?A2E5F' 46' A'?' D441' 2&F' A*E+ 5' 15 2B -'$5?' 5' A2F(' '&F55F(' 2' :4&6'F5&:5' '&9' A'?' 4@&

1' ; # & $" $ ' ' 0# L - $
' D ' #& ' ?# ' 0 ' $# ' # ' $' - /#/' -$ "> #&' G?#&?' ? ' - /' * ?' ' ? ' &?$ $& ' *' H#+ ' $ ' #' P ? $' Q > / (' $0 ' $ ' L $ /' 0>' $/$+ ' /(0 $>' # ' ? ' $ ' $ /' ' $ ' +$ DL $0 ' *' ? ' - / & # ' L + # ' *' ' >' ' '##' - - ' , .' ? ' $ '#[? ' $/>' - ' ?#+' #"? ' #& ' $' G ' *' ? ' &$ /# $(' &?$ $&L # #& '?# ' * / +' * +' 0#" L >' $ /' / - # +%
' ? # ' & J# ' MM$? ' /# # " # ? /' $ - ' ? G ' ' $0 /' + ' *' ? +' ' * +' ?#"?' $ #$ & < *' G?#&?' '# / "#' ' + ' $&& ' ; # & $L " $ '
*' !' # ' $ /' / G' $' & " ' ' $ &$ %V
? ' ' '# ' + G?$ ' $ ' 0 ' J- ' 0 ' ?$ '$-$" ' *' - ' &$ ' ? ' , # $0 ' + # ' *' &?' - ? + ' 0 L *$& # ' G? ' ? >' - # "' $ '# ' ' * ' ? ' &$ ' * +' '$ # >' &$- #& ' $ /' *# ? ' &?' + #' ' &$ ' 0 ' #+ - /' ' H#+ ' 6 ' ?$/' $ G$> ' & L &# # >' $0 $# /' * +' $-L - - #$ # "' ?# ' $ &?# -# & -$' L ' ' $ ' G ' ?$' ' ' ?#+L *' ' ?# ' *$+# >' 6# ' />#' "' 0 , ' ? * ' G$ ' >' # ' D -# "' G# ?' ?# ' G? ' #*

D4@51?' 2DD142:A'&G' -4' 2114G2&:5(' @A':A' 5F' A'E' -4' *&F51$2 *5' -A5' 2+' '-'5?' 46' 4-A51?(' 2&F' -4' 44H' 4&' -A5E' 2?' A'?' '&?-1*E5&-?' 12-A51' -A2&' A'?' 5M*2 ?'N' +*-' A5' A2F' &4&5' 46' -A5' $* G21' D1'F5' 64*&F5F' 4&' @52 -A' 41' ?-2-'4&' 5' 615M*5&- C' 2 *F5F' -4' A'?' 4@ C' :4&B F'-'4&' '&' 521 C' '65' @'-A' G152-' A*E' '-C(' -A2&H'&G' 52$5&(' @'-A' -521?' '&' A'?' 5C5?(' 641' '-?' 5J-1241F'&21C' G44F&5??' -4' A'E' 5' &4-' 4& C' 15E5E+515F(' +*-' F'F' E2&C' 2:-?' 46' H'&F&5??' -4' A'?' 521 C' 61'5&F?(' 46' @A':A' E415' -A2&' 4&5' -4*:A'&G' 2&5:F4-5' '?' 15 2-5F' *:A' -12'-?' 46' ?5&?'+' '-C(' G 52E'&G' -A14*GA' -A5' &2B -*12' 2*?-51'-C' 2&F' ?-51&&5??' 46' 2' F'?D4?'-'4&' 'H5' A'?(' 'H5' 'GA-' +152H'&G' -A14*GA' 2' F21H' :4*F(' 2665:-' *? -A5' E415' ?5&?'+ C' +C' :4&-12?-

5' @2?' '115D142:A2+ 5' '&' A'?' E412 ?(' 2&F' :4&B 641E5F' '-512 C' -4' 2' -A5' 1'G'F' 5J2:-'4&?' 46' A'?' ?5$515' 41F51(' '&' -A5' :4*1-' 2?' 62'-A6* C' 2?' '&' -A5' :4'?-51' 5' @2?' ?4+51(' 2+?-5E'4*?(' :A2?-5' &' -A5' 2--51' D21-':* 21' A5' @2?' :2156*' -A2-' &4' ?*?B D':'4&' 46' -A5' ':5&?5' @A':A' ?4' 46-5&' ?4' 5F' -A5' :51GC' 46' -A5' D51'4F(' ?A4* F' 2--2:A' -4' A'E 9' &' 4&5' 4::2?'4&(' @A' 5' 4&' 2' ,4*1&5C(' A5' @2?' '&$'-5F' -4' D2??' -A5' &'GA-' 2-' -A5' A4*?5' 46' -A5' *:A5??' 46' 2M*5F2(' +5'&G''&641E5F' -A2-' ?A5' @2?' 2+?5&-' A5' F*:A5??' @2?' 2-' A4E5(' A4@5$51(' 2&F' 5&-515F' -A5

9' A5' G44F' 62-A51' b*'&-2B &' 2' $'&F':2-5?' A'?' A5141?:A2?B -'-C(' ?4E5@A2-' 2-' -A5' 5JD5&?5 46' A'?' +155F'&G' R' '?D*1'-C @2?*&5J2ED5F(K' ?2C?A5' R' 5 ?A*&&5F' -A5' ?5J(' 'H5' ?4' E2&C 5$' ?D'1'-?(

' ' - ' 5-' A51' +5' &5$51' ?4A4C' 2F' '-' &4-' +55&' '&-A5 @2C' 46' A'?' D1465??'4&2' :2' '&G(' '-' '?' &4-' -44' E*:A' -48?2C' A5 @4*F' &5$51' A2$5' ?*6515F' A'?' 5C5?-4' 'GA-' 4&' 4&5' 46' -A5E'K 1:A5-CD4(' D' S

2D2'0-E5&-' +56415' +5' 15-'15F' -4' 15?-' I' 4*' A2$5' F5:5'$5F' E5(' 2FC(K' ?2'F' Z'E5&5?(' 1'?'&G' '&' 2&G51N '6' C4*' A2$5' 2&C' +*?'&5??' @'-A' E5(' C4*' @' '6'&F' E5' -4.E4114@' 2-' -A5' :4&65??'4&2 K' 4' ?2C'&G(''5' 2+1*D- C' 56-' -A5' D2 2:5'9

5' :211'5F' A'?' 2*?-51'-'5?' 2&F' E41-'6':2-'4&?' ?4' 621' 2?' -4' 5&F2&G51' A'?' A52 -A' A515' '?' 2' :*1'4*?' +1'56' 5J-2&-' 46' 4D5' 54' -A5' 5&-A(' F2-5F' -A5' 2?-' C521' 46' -A5' :21F'&2 0?' '65(' 5&,4'&'&G' A'E' -4' 2+2-5' A'?' ?5$515' D5&2&:5(' -4' 52-' E52-' 2&F' 5GG?' 4&' -A5' 41F'&21C' 62?-?(' -4' -2H5' 466' A'?' 12&:'?:2&' 614:H(' 2&F' ?55D' '&' '&5&' 2&F' 4&' 2' +5F' 5' @4* F' &5$51' :4&?5&-(' A4@5$51(' -4' F'$5?-' A'E?5 6' 46' A'?' E4&2?-':' @55F?' R' $5&' 2CE5&(K' ?2'F' A5(' 2 *F'&G' -4' -A5' :*?-4E' 46'-A5' 4E2&' 2-A4 ':?(' I' D*-' -A5?5' 4&' @A5&' -A5C' 215' FC'&GN' 2&F' ?A2 ' (' @A4' A2$5' @41&' -A5E' 2 ' EC' '65(' -2H5' -A5E' 466' 2-' -A2-' -'E 5PK6

&4-A51' 2&5:F4-5' '?' -4 F' '&' 15 2-'4&' -4' A'?' F15??' $51' A'?' :421?5' @44 5&' 614:H' A5' @415' -A5.' :4?- C' 2DD215' ?*'-5F' -4' A'?' 12&H' &' 'ED51-'&5&-' 12&B :'?:2&' D152:A51' -44H' 4::2?'4&' 4&5' F2C' +56415' A'E' -4' 2*&:A' 4*-' 2G2'&?-' -A5' *J*1'5?' 46' -A5' -'E5N' 5?D5:'2 C' '&' F15??(' 4+$'4*? C' 2 *F'&G' -4' -A5' :21F'B &2 (' @A4' @2?' 2--'15F' '&' 2' ?*D51+' ?*'-' 46' 51E'&5(' @A':A' A2F' +55&' D15?5&-5F' -4' A'E' 5' A521F' -A5(' ?51E4&' D2-'5&- C' -4' -A5' 5&F(' 2&F' 26-51' -A5' ?51$':5?

1' &?# '6# # '/'H#+ =' (&G#?'& ++ $# ' ? ' '#'''#' -'B4(' G#&'$' "' ' &? >- *' ; # $ # $' ?$' "#' ' ?' #0'#''&$-'J' 0 # *' *' ?#' 6 # ' ' M ?

S

@515 :4&: *F5F -44H -A5 D152:A51 '&-4 -A5 ?2:1'?-C 2&F A2$'&G :4E E5&F5F -A5 G5&512 -5&41 46 A'? F'?:4*1?5 ?A4@5F *&F51 A'? 6*1? 2&F 6'&5 '&5& -A5 :421?5 614:H 46 A'? 41F51 &5J- A'? ?H'& 4E5 2::4*&-? 2FF -A2- -A5 61'21 4& -A5 4-A51 A2&F @415 6'&5 '&5& *&F51 A'? E4&H'?A 614:H 6-51 -A5 :21F'&2 0? F52-A 2 '-- 5 +4J @2? 64*&F '& A'? 2D21-E5&- :4&-2'&'&G -A5 'ED 5E5&-? @'-A @A':A A5 *?5F -4 E5&F -A5 15&-?# 46 A'? -A152F+215 G21B E5&- @'-A A'? 4@& A2&F? 9

'-A ?4 E*:A -4 F4 '- E2C @5 +5 +5 '5$5F -A2- Z'125&5? @2? 2$21':'4*? 46 -'E5 5 ?5 F4E ? 5D- E415 -A2& 64*1 41 2- E4?- 64*1 A4*1? 2&F 2 A2 6 5 @2? ?A2$5F '& -A5 &'GA- A521'&G 2- -A5 ?2E5 -'E5 ?4E5 5F'6C'&G 152F'&G 5 64 4@5F -A5 ?2E5 D12:-':5 2- A'? E52 ?(41 $21'5F '- @'-A '?-5&'&G -4 -A5 21G*E5&-? 46 ?4E5 46 A'? -A54 4G':2 +15-A15&(G5&512 C 4&9 ?4E5 ?*+-' 5 M*5?-'4& 46 ?:A44 F'$'B &'-C A'? @2? A'? 4& C 15:152-'4& 5 A2F 2? '-- 5 -2?-5 2? -'E5 641 'GA-51 2&F E415 5 5G2&- 2E*?5E5&-? 5 ?D4H5 +1'56 C(2&F 2 @2C? -4 -A5 D4'&- 5 @2? &4 61'5&F 46 'F 5 :515E4&'5? 2&F *?5 5?? $'?'-?M -A4*GA A'? ?'-*2-'4& 5JD4?5F A'E E415 41 5?? -4 +4-A 5 615M*5&- C A2F 2 $4 *E5 C'&G 4D5& 4& -A5 -2+ 5 +56415 A'E(2&F @A5& A'?

I 8 + K 0 8 # / & ? 8 $ / $ /# $ * F25 A ; # $ # $ &? = / K$ # $ ##' &?$- '' >- #0 ## &$- #' *' ?# 6# > ? & / & ? $/ +$>' *# /' $' ' R *' ? G - #+$? &L ? ?# $ &/ '# $' #+#L &$ # G$ **#&# >' &?$ $&L $ & / /' *'H#+ C - L # #&

$'?'-51' ?-2C5F' -44' 4&G(' 41' -44H' *D' A'?' -'E5' @'-A' 'GA-' 2&F' 61'$4 4*?' :4&$51?2-'4&(' A5' '&-'E2-5F' A'?' F'??2-'?62:-'4&' +C' 15?*E'&G' A'?' 152F'&G' A5' :21B F'&2 0?' +44H' E*?-' A2$5' +55&' 2?' 62-2' -4' 2' 15D*-2B -'4&' 2?' 4&-2&5 5"?' 521.-1*ED5-9

' @' ' :4?5' -A'?' ?H5-:A' 46' Z'E5&5L' F5' '?&514?' @'-A' 2' +1'56' 4*-'&5' 46' A'?' D51?4&' '?' :4ED5J'4&' @2?' ?2 4@'N' A'?' :4*&-5&2&:5' ?A21D' 2&F' 5E2:'2-5F'N' A'?' &4?5' 2M*' '&5'N' A'?' *DD51' 'D' D14,5:-5F' 621' 4$51' -A5' 4@51' '?' 5C5?' @515' ?E2 (' F55D.?5-' '&' A'?' A52F(' F21H(' $'$'F(' 2&F' D5&5-12-'&G' '?' 6415A52F' 2ED5(`2&F(' @A2-' @2?' 15E21H2+5(' @'-A4*-' 2' @1'&B H5(' -A4*GA' -A5' 5JD15??'4&' 46' A'?' 652-*15?' @2?' ?4E5B @A2-' ?5$515 6' '?' $4':5' @2?' :521(' +*-' &4-' 2G155B 2+5' '?' 5&*&:'2-'4&' E52?*15F' 2&F' D15:'?5' '?' F5E52&4*1' @2?' G12$5(' A'?' :211'2G5' 6''0E' 2&F' 515:-N A5' @2?' -2 ' '&' ?-2-*15(' 2&F' A'?' @A4 5' D15?5&:5' :41&.

I' Ef0# / '; # & $" $ ' ' ?# '# + '$ /' ? ' D 'G$' A 8 + K' ' 0 '8 # ' 0# * /' ' 0' G# ? ' ' - A 0 ':#/$'/'H#+ K' 8 + K' ' 0 '8 # ' * ' &$-'J###'A';# $ # $' &? =' F23.' #&? # C' G$' * /' >-' #0'##'&$-'''##''###< G?' '0'- * $ /'G# ?'# '? ' &# ' ':"$ $' ?' &$%/# $C' ?' 00' #&?$ /' / / & '$' * # /' ? >' * +' ?#' G?#&?' +$>' '#' $ '8 + +' ' ?# D' $ ' ?' -?> # "# ' ' ' G? ' ' ' *' $ C' + ' ?$ ' ?' *$& ' ' ?$0# ' *' / --# "' ?#' +- ' ' # ' ' ' >' '$' 2F' G? ' ?' & ' $ # ' /#/' ' - # ' ' -$' /' C J?$ # ' -$>' ?#+' * ' ?' 0 ' *'? /L ' '$- ' /' ' & ' $ ' &' # "' #' - ' ?' " /= $ /' , #*#' , C#' C '!$+$#' $ & ' > / ' $&& /# "' ' 8 /L +$' /' < $' # ' , ' ' +# ?' & /' U' ?#*' ?#' +L ' /' H#+ ' #' $ ' L - V' ' &?' $' + " &>' ' $' , # ' $ #0 $' ' $ ' ' ' ' ** >$0 '/ '/' ', C#' X H#+ C' ? $/' G$' JL $' #' - , ' ! #= V' $=' $+# /' + ' * >' > $ ' $* $ ' -' 2))

<
E 2&F'&G '?' :4&?-'-*-'4&(' &2-*12 C' 14+*?-(' @2?'
'ED2'15F' +C' A'?' ?5$515' 2*?-51'-'5?' 2&F' ?5$5151' :215?N
2&F(' '&' -A5' 2--51' C521?' 46'A'?' '65(' @2?' ?4' F5 ':2-5' 2?'
-4' +5' 5J-15E5 C' ?5&?'+ 5' -4' -A5' $':'??'-*F5?' 2&F' '&B
: 5E5&:C' 46'-A5' @52-A51 9

' A2$5' &4-':5F' -A5' 15?5E+ 2&:5' @A':A' Z'E5&5?'
+415' -4' -A5' G152-' 15&:A' E'&'?-51' 21F'&2' ':A5B
'5*'% '-' @2?(' 26-51' 2 (' A4@5$51(' E415' '&' -A5' :'1B
:*E?-2&:5?' 46' ?'-*2-'4&(' -A2&' '&' -A5'1' :A212:-51?N
-A4*GA' -A5' E4?-' D14E'&5&-' -12'-?' 46' -A5?5' @515' &4-'
F'??'E' 21 6' 4-A(' -A4*GA' +15F' 5:: 5?'2?-':?(' 152:AB
5F' -A5' A'GA5?-' A4&4*1?' 46'-A5'?-2-5(' 2&F(' '&F55F(' E2C'
+5' ?2'F' -4' A2$5' F'15:-5F' -A5' F5?-'&'5?' 46'-A5'1' :4*&.'
-1'5?%X% ':A5 '5*0?' 2*-A41'-C(' A4@5$519(' @2?' E415'
2+?4 *-5' -A2&' -A2-' 46'Z'E5''5?(' 641' A5' @F?' ?:155&5F'
+C' -A5' ?A2F4@' 46' 14C2 -CN @A' 5' -A5' 2--51' @2?' 5JB
D4?5F(' +C' A'?' '&?* 2-5F' 2&F' *&?A5 -515F' D4?'-'4&(' -4'
-A5' 6* ' + 2L5' 46' 5&$C(' 2&F(' 46' :4*1?5(' 4DD4?'-'4&'
4-A' @515' 2E+'-'4*?' 46' E' '-21C' G 41C(' 2&F' ?A4@5F'
:2D2:'-C' 641' 2--2'&'&G' '-% +4-A' 2:A'5$5F' -A5'1' G152-'
15?* -?' +C' -A2-' 1215' *&'4&' 46' A'GA' E5&-2' 5&F4@.

I' 0 ' :#/$' /' H#+ K' *$' ' *' ?' * #" ' H#+ L
&$-' J'### A 8 + K' ' 0 '
8 # '* 'F23 !' ? ' &$ $ " ' *' ? ' '$ #L
' ' # ' $ # '?$ ' 0 ' ' **#& ' *' H#+ ' && -# '
/ ' /' ' ?#' ' >' 0! & ' $ '?$ *'$ -$" ' *' ; # $ # $'
/' U' $ $ ' / ' $ /' ' ? ' #+ ' *'?#' / $?' ? '
H#+ ' ' / ' $ /' #&? # ' W&?# *' ' ?$' ? '*# /' G '
-$' ' C 00' #&?$ /<' $? ' *' &?0# ? -' *' / V
' J'2)E@V'--'FFF<2F+ ' $ /' & , >' #+$ ' *'
? ' $? ' G# ?' $' &$ / ' -$# '8 $ /' ?$ & ' *' $ L
$ ' # / /' G? ' $ # $' # ' $ /# $' *' ? ' +$ '
'$ # >'#' # /' #D ' ? ' ? &?' , # # =" $' *'
0$ $ &' G# ? ' ? # $ # ' # $ # ' $ /' "

E 5&-?' 2&F' G152-' 566':'5&:C' '&' 2:-'4&(' @A':A' '?' 2 @2C?' '115?'?-'+ 5

A5' E412 ' +2?'?' 46' -A5'1' :A212:-51?' @2?' 5&-'15 C' F'66515&-' A5' 15&:A' :21F'&2 0?' @2?' ?5 6'?A&5??(' D*15' 2&F' *&E'-'G2-5F% A'?' 15 'G'4&(' D4 '-':?(' A'?' D1'&:'D 5?' '&' ?A41-(' '&' 5$51C' ?5&?5(' @515' ?*+?51$'5&-' -4' -A'?' 665&:5?' 2G2'&?-' -A5' ?-2-5' A5' :4* F' 641G'$5'% -A4?5' 2G2'&?-' A'E?5 6' A5' D*1?*5F' @'-A' 'ED 2:2+ 5' 12&:4*1' '?' 2*-A41'-C' @2?' '-512 C' :5E5&-5F' @'-A' + 44F' '?' 'E E5&?5' D4@51?' 2&F' D2-14&2G5' @515' D51$51-5F' -4' -A5' 2GG12&F'L5E5&-(' 46' A'?' 62E ' C' A4*GA' +4 F' -4' -5E51'-C' '&' A'?' D 2&?(' A5' +5-12C5F' E415' -A2&' 4&:5' 2' @2&-' 46' -1*5' :4*12G5' '&' -A5'1' 5J5U' :*-'4&' AD*GA' $'4 5&-' 2&F' 'ED5-*4*?(' A5' :4* F' ?-44D' -4' +5'(2' F'??5E+ 51% -A4*GA' 2114G2&-' '&' -A5' 5J-15E5(' A5' :4*1-5F' -A5' ?46-' '&:5&?5' 46'6 2--51C' &' A'?' E2&&51?' A5' A2F' -A5' 2F$2&-2G5' 4$51' -A5' D2&'?A' D15 2-5' 5' :4* F' +5' 2' :4*1-'51' '&:4*1-?(' 2&F' A2F' 2' E415' 156'&5F' 2&F' :*-'$2-5F' -2?-5' &' 4&5' 15?D5:-' A5' A2F' -A5' 2F$2&-2G5' 4$51' Z'E5&5?' '&' E412 ?' 5' @2?' &4-(' 'H5' A'E(' 2' +'G4-' 5' A2F' &4-' -A5' 15 'G'B 4*?' +2?'?' '&' A'?' :4ED4?'-'4&' @A':A' '?' -A5' 64*&F2-'4&' 46' +'G4-1C > A5'1' F52-A?' @515' -CD':2' 46' -A5'1' :A2B 12:-51?' ':A5 '5*' F'5F(' 2?' A5' A2F' '$5F(' ?4' F55D C' 5J5:12-5F(' -A2-' -A5' 5&12G5F' D4D* 2:5' @4* F' ?:21:5 C' 2 4@' A'?' 15E2'&?' -4' +5' 2'F' M*'5- C' '&' -A5' G12$5' Z'E5&5?(' 4&' -A5' :4&-121C(' @2?' +*1'5F' 2E 'F' -A5' -521?' 2&F' 2E5&-2-'4&?' 46' -A5' ,D54D 5% A'?' E5E41C' @2?' A4&4*15F' 5$5&' +C' A'?' 5&5E'5?(' 2&F' A'?' &2E5' '?' 15B $515&:5F' +C' A'?' :4*&-1CE5&(' -4' -A'?' F2C(' 2?' -A2-' 46' 2' 2'&-

#& ʻ *ʻ$ ʻ ? ʻ +#" $ # ʻ *ʻ ? ʻ & ʻ ʻ ? ʻ& & /# '" - # ʻ
*ʻ ? ʻ G Dʻ ? G ' ʻ & + - ? /# '" /# $ /0 ʻ / $?ʻ $ /ʻ ? ʻ
" &>ʻ *ʻH# + ʻ ? ʻ$? ʻ# ʻ ' >ʻ* ʻ$ /ʻ&# & + $ #$ ʻ ʻ
? ʻ ?$/ʻ $ʻ & -#& ʻ - $& ʻ # ʻ ? ʻ " ' + ʻ $ /ʻG$ ʻ $ G$> ʻ
G# ?ʻ ? ʻ & +2ʻ ?# ʻ #+ >ʻ# ʻ "$ /ʻ ʻ ?# ʻ# + - $ ʻ - # /ʻ# ʻ
*ʻ ? ʻ?#"? ʻ '$ ʻ$ ʻ ?$ ʻ *ʻ$ ʻ > G# ʻ$ /ʻ$ ʻ $& ʻ $ /ʻ# ʻ
+$>ʻ 0 ʻ$/ / /ʻ$ʻ +$ ʻ *ʻ $"$&# >ʻ$ /ʻ /ʻ - # &#- ʻ ʻ 0 ʻ
& + + $ >ʻ ʻ ? ʻ + #ʻ *ʻ ?# ʻ G Dʻ /ʻ 0 ʻ , # /ʻ ?$ ʻ ? ʻ
0 # *ʻ #0 ʻ *ʻ 'ʻ$ ʻ 8 + Kʻ ? ʻ $&& + - # ? /ʻ 0# " $-? ʻ *ʻ $ L
/# $ʻ H# + ʻ R ʻ $ ʻ $ ## 8$ /# $ $ '$!$ # ʻ
, #0 ʻ '# ʻ " $'# #+ ʻ + , ʻ # $ +ʻ & +ʻ - #+# ʻ -$ #& - ʻ
, # , $M $ʻ * +Mʻ$ +ʻ + + #$+ʻ & + - J ʻ ʻ 0$ /ʻ ' =ʻ
"$ # ʻ + $+ʻ - $+ʻ ! ' Vʻ ʻ 0 ʻ 8 # ʻ $ *$ # ʻ N

<=

Z Z

8 : 7 6 L

, A2$5 &4@ -12$51?5F -A2- 'ED41-2&- D51'4F 46 A'?-41C(:4ED15A5&F'&G -A5 2--51 D21- 46 -A5 6'6-55&-A 2&F -A5 +5G'&&'&G 46 -A5 ?'J-55&-A :5&-*B 1C 2 D51'4F @A5& -A5 :4&$* ?'4&?(@A':A ?A44H -4 -A5 G14*&F -A5 "2&:'5&- D4 '-':2 62+1':? 46 *14D5(14*?5F -A5 E'&F? 46'-? '&A2+'-2&-? 614E -A5 5-A21GC '& @A':A -A5C A2F +55& +*1'5F 641 2G5? D2'&(2? @5 A2$5(?55&(65 - -A5 G5&512 'ED* ?5 !&F51 -A5 G 41'4*? 1* 5 46 51F'&2&F9 2&F ?2+5 2(@5 A2$5 +5A5 F A51 5E51G'&G 614E :A24? '&-4 2 &5@ 5J'?-5&:5 *&64 F'&G(*&F51 -A5 '&6,*5&:5 46 '&?-'B -*-'4&? 2F2D-5F -4 A51 G5&'*?(5&51G'5? 46 @A':A ?A5 @2? +56415 *&:4&?:'4*? 5& 21G'&G A51 15?4*1:5? 614E 2 -A5 ?D1'&G? 46 F4E5?-':' '&F*?-1C 2&F :4EB E51:'2 5&-51D1'?5 2&F '&?5&?'+ C 4?'&G -A5 6514B :'4*? A2+'-? 46 2 65*F2 2G5('& -A5 156'&5E5&-? 46 2&'&-5 5:-*2 2&F E412 :* -*15

& -A5 6* &5?? 46 -'E5(@A5& A51 F'$'F5F D4@51? A2F +55& :4&:5&-12-5F *&F51 4&5 A52F(2&F -A5 ?C?-5E 46 '&-51&2 5:4&4EC :4ED 5-5F(@5 9A2$5 ?55& A51 F5?:5&F '&-4 -A5 215&2 @'-A -A5 4-A51 &2.

-'4&?' 46' *14D5(' 2&F' '&' 2' $51C' 65@' C521?' 2:A'5$5' -A5' E4?-' 'ED41-2&-' 2:M*'?'-'4&?' 46' -511'-41C(' +4-A' '&' -A2-' M*21-51' 2&F' '&' 61':2'N' 2&F'6'&2 C':14@&'&G' -A5' @A4 5' +C' -A5' F'?:4$51C' 2&F' 4::*D2-'4&(' 46' 2' +4*&FB 5??' 5ED'15' +5C4&F' -A5' @2-51?' &' -A5' D14G15??' 46' -A5' 2:-'4&(' @5' E2C' A2$5' +55&' -44' E*:A' 4::*D'5F' @'-A' '-?' F5-2' ?' -4' 2--5&F' ?*66':'5&-C' -4' -A5' D1'&:'B D 5?' @A':A' 15G* 2-5F' -A5E'N' +*-(' &4@' -A2-' @5' A2$5' 152:A5F' -A5' :4?5(' @5' E2C' +5' D51E'--5F' -4' :2?-' 2' D21-'&G(' G 2&:5' 4$51' -A5' 6'5 F' -A2-' @5' A2$5' -12B $51?5F(' 2&F' +1'56C' ?*1$5C' -A5' D1'&:'D2' ?-5D?' +C' @A':A' -A5' D2&'?A' ?4$515'G&?(' *&F51' '$'&5' 14B $'F5&:5(' 5F' -A5'1' &2-'4&' *D' -4' ?*:A' 2' A5'GA-' 46' D14?D51'-C' 2&F' G 41C

51F'&2&F' 2&F' ?2+5 2(' 4&' -A5'1' 2::5??'4&(' ?2@' 2-' 4&:5' -A2-' -A5' :A'56' ?4*1:5' 46' -A5' F'?-12:-'4&?' 46' -A5' :4*&-1C' 2C' '&' -A5' 4$51G14@&(' D4@51?' 2&F' 62:-'4*?' ?D'1'-' 46' -A5' &4+' '-CN' -A5'1' 6'1?-' 566641-?(' -A5156415(' @515' F'15:-5F' -4' 2+2-5' -A5?5' 2?' 621' 2?' D4?B ?'+ 5' ' ?'E6 21' E4$5E5&-' @2?' G4'&G' 641@21F' '&' -A5' 4-A51' *14D52&' E4&21:A'5?N' +*-' '&' &4&5' @2?' '-' :14@&5F' @'-A' ?4' ?D55FC' 2&F' :4ED 5-5' ?*::5??' 2?' '&' 2?-' 5(' +C' E52&?' 46' -A4?5' +4 F' 2&F' F5:'?'$5' E52?*15?' @A':A' A2$5' +55&' F5-2' 5F' '&' 2&' 521 C' :A2D-51' 46' -A'?' @41H 9' A5' ?2E5' D4 ':C' @2?' ?-52F' C' D*1?*5F' F*1'&G' -A5' 15E2'&F51' 46' -A5'1' 15'G&'N' 5??' '&F55F' +C' 4D5&' 2??2*-' -A2&' +C' '&F'B 15:-' 1252&?6

I' ' $ ' ' &?$- ' '#' * ' /#+# # ?# "' ? ' & , & ' ' + "' ? ' +# ' + $ ' *' ? ' 0## >' +$>' 0 ' + =
' '

E 4&G -A5?5(4&5 46 -A5 E4?- 5665:-*2 @2? -A5 4E'??'4& -4 ?*E E4& -A5 D1'$' 5G5F 41F51? -4 :41-5?('& ?5$512 46 -A5 E4?- 'ED41-2&- ?5??'4&? 46 -A2- +4FC A'?(?4 621 614E +5'&G 2 &5@ ?-15-:A 46 D1514G2-'$5(@2? 4& C 2& 5J51:'?5 46 -A5 2&4E2 4*? D4@51? 2 152FC 62E' '21 -4 -A5 :14@&(2? 5 ?5@A515 &4-':5F 9 41 F45? '- ?55E -4 A2$5 +55& $'5@5F 2? 2 G1'5$2&:5 +C -A5 4-A51 D21-C(@A4 15G21F5F -A5?5 E55-'&G? @'-A -A5 E415 '&F'66515&:5(?'&:5 -A5'1 21'?-4:12-': 'E E*&'-'5? 5J5ED-5F -A5E 614E -A5 -2J2-'4& @A':A @2? G5&512 C -A5 D14E'&5&- 4+,5:- 46 -A5E N +*-(614E @A2-5$51 :2*?5 D14:55FB '&G(+C -A'?' 'ED4 '-': 2:M*'5?:5&:5 -A5C ?*115&F515F(*&F4*+-5F C(-A5 E4?- $2 *2+ 5 46 -A5'1 1'GA-?(> :&5 @A':A A2? 5&2+ 5F -A5 1'-'?A 21'?-4:12:C -4 E2'&-2'& '-? D4 '-':2 :4&?'F512-'4& *&'ED2'15F(@A' 5 -A2- 46 -A5 2?-' '2& A2? 62F5F 2@2C '&-4 2& 5ED-C D2G52&-(6

&4-A51 D12:-':5 ?-52F' C D*1?*5F +C -A5 ?4$5B 15'G&?(@2? -4 12'?5 E5& 46 A*E+ 5 ?-2-'4& -4 466':5?

/' ? " $ # - & # "' ? % - #'# "# /$/ # L + * + >' , # # "' 0 & #" /' 0>' ? " $ / ' $ /' - $ 0 ' G?#&?' * +' ? '#+ ' *' /# $ /'$ /' $0 $'G ' 0+# /'* ' #"L $ >' ' **#& - &#$ >' $-- # /'* ' ? '-+◊- ' $ $=f K$ '/ ' / K$ ' #" #/$/ ' #0 ' ##' &$-'J## I' ' /' & '# *' '- # ' J$+- ' *' ?#' - #&>' *' ? ' ' #" ' && / # ' ? '& ' *' $/ #"$ '2()B< G? ' f'#? $ /# "' ? '#+L - $ ' 0! & ' *'P "# $# ' ' 0 ' ? ' ?# /' $ 'G ' - ' "$ ' > ' $ B= * ' ? '#+ ' *' /# $ /'$ /' #& ' -'5(.' ' , $ >' $-L - # '# $# '#' $** / /'0>' ?' &$ ' ' ++ ' ?' " $' '$ $ ' ' ?' & ' *' / ' # '2(3E' G? ' +$ ' $ >' &?# "' ? +'$' ? ' ' &$ # ' *' ? # '? 'S /' $ 'G ' / ' /# & # ' 0 ' ' # ' ? ' 0#/ -' 2B@

: 7 @2)

46 -A5 A'GA5?- -1*?-N &4-(A4@5$51('H5 -A5'1 :4&B -5ED4121C(4*'?' -A5 5$5&-A(+5:2*?5 -A5'1 ?-2-'4& @2?' A*E+5('& 41F51 -4 E41-'6C -A5 A'GA51 41F51?(+*- +5:2*?5 -A5C :4*1-5F E51'- @A515$51 '- @2?' -4 +5 64*&FN9 > 2 D4 ':C E*:A 2&F F5?51$5F C :4EB E5&F5F +C -A5 ?2G2:'4*?' 4+?51$51?' 46 -A5 -'E5 6 A5 A'?-41C 46 D2'& F45?' &4- D14+2+ C 26641F 2&B 4-A51 5J2ED 5 46 2 D51?4& 46 -A5 4@ C :4&F'-'4& 46 Z'E5&5?' 2--2'&'&G(&4- E515 C -A5 A'GA5?- 466':5?' '& -A5 H'&GF4E(U+*- 5$5&-*2 C '-?' *&:4&-14 5F ?*D15E2:C - A5 E* -'D ':2-'4& 46 5G2 -1'+*&2 ?(2&F 4-A51 :'$' 466':5?(26641F5F -A5 ?4$515'G&?' 2ED 5 ?:4D5 641 D*1?*'&G -A'?' D4 ':C('& -A5 F5E2&F :15B 2-5F 641 D1465??'4&2 ?:'5&:5 A5&4+5?' '&-1*?-5F A'-A51-4 @'-A -A5 :A'56F'15:-'4& 46 2662'1?(&4@ ?2@ '- D2?' '&-4 -A5 A2&F?' 46 D51?4&?' @A4 A2F 4-A51 M*2 '6':2-'4&?' -A2& E21-'2 D14@5??' 41 A515F'-21C 12&H *:A 2?' :4*1-5F F'?-'&:-'4& @515 :4ED5 5F -4 ?55H '- +C -A5 15G* 21 2$5&*5?' M6 2:2F5E ':' F'?:'.' D '&5 4@'95J-5&?'$5 C -A5 ?D'1'- 4D512-5F 2&F

1 # $+ - # &#- +$/ # +, $ >'"#$ # + $# L $# # "' ? - +# >' *' ? '# **#& ' '# / + # ?$ # 2(5) ? >' + ' /'$' +0 *'! # ' ? &?$ " *' 0 #L 0 >' $ /' ? +$ ' $ # * +' ? #' $ # ' ? >$ & &# ' ; # & $" $ '/#$ / 8 #K# $' *' ? & &#' ?$: & + + /# "' ? & $/ - /' 0>' ?# " $ /L -$ # ' ? # - + #

**#& $- /' $ 0$!$ $ $## 2@2) &$-'#'

'# $ & *' &?' $/L '$ & + $ ' G$ # "' # -$ # ?'?# >& G# ? '$/L ' #-- /$'# ?# #-': C #+ '$ /' ? # & *' ? $& # ' G <+ 'G? ' G# "' ? # && ' ' ? # ' G '- G ?$ ' ? ' #+0 &# # >' *' ? & /' $>' & $#+' ' ? '0 /' $ /'# / - / ' G$>' J &# /' 0>'H#+

<S

@'-A @A2- +1' '2&- ?*::5??(@5 A2$5 2 152FC ?55& 9
*-(@A2-5$51 -A5 21'?-4:12:C E 2C A2$5 G2'&5F '&
156'&5E5&- 46 :A212:-51('- 15?'G&5F E *:A 46 '-? D15B
?:1'D-'$5 D4@51(@A5& '- :4&F5?:5&F5F -4 5&-51 -A5
215&2 4& -51E? 46 5M*2 :4ED5-'-'4&@'-A '-? '&651'41?
641 -A5 D1'L5? 46 -2 5&- 2&F ?:A4 21?A'D

51F'&2&F D*1?*5F 2 ?'E' 21 :4*1?5 '& A'? 4@&
F4E'&'4&? 46 12G4&(@A515 A5 *&'641E C ?*DD41-5F
-A5 :4EE4&?(41 E2C E415 D14D51 C +5 ?2'F -4 A2$5
+55& ?*DD41-5F +C -A5E('& -A5 2--5ED- -4 :'1:*EB
?:1'+5 -A5 2*-A41'-C 46 -A5 G152- 65*F2-41'5? B
-A4*GA A5 2::4ED '?A5F -A'? -4 2 :4&?'F512+ 5 5JB
-5&-(-A5'1 D4@51 @2? -44 6'1E C '&-15&:A5F +5A'&F
D4?'-'$5 '&?-'-*-'4&? -4 +5 2665:-5F 'H5 -A2- 46 -A5
2?-' '2& 21'?-4:12:C(@A4?5 1'GA-? A2F +55& ?@5 5F
+5C4&F -A5'1 5G'-'E2-5 'E'-? +C 5$51C ?D5:'5? 46
*?*1D2-'4&P

I $ &?$- J#J
A U E3 -$ & $' V $>
'# / # *'?# #$ "
U , + ! "$ $/ ,
/$ - # &#- -
&# B , '$ '! $+
/ #&# , , $/=
, # 0$ / &$-$ $" $ B
+$ $ / ' ' # / $ " / '
#$ _V ; # & $" $
$ 2 , # & 4 /#$ ( ) ?
#+ G /' ?$' 0
#"? /'* '$ -$ # ?' &$'$=' I
' ? '#* ?'& >

*' ? '& *' $ $ $> /'
2@2@ ? $" 0
G# #? /' ? - - # G # ?' ? '
/ #" *'& + - # "' ? '& G

, # ?' & $# #"? *'
! # /#& # G?#&?' # $ + /'
' ? # '$ $ U -$ =
&# V $#/ ? &?0# ? -' *'
$ $" $' # $ - &?' ? '
&&$ # U , $ #$ - /#/ '
+ &? , & - $'
& 0 $ > - '# / =
#$ I I I I I ' =
$/ / > $ #0 >
$' " $ '# / >' #+$ $ '
- 0 *#&# # + $ V 9 #='
$ $ + '#' #0 J '&$-'
J&### .' ? ? $ # '
*$& $G' ? # # '
& $ >' & & G# ?' ? '
& G # ' ?# $ # *' # '
$ &# - "$ #' $ &$ '
/ / & / * 2EE

: 7 ' 6 ' ' <

'-A' 2 ' -A5' D1'$' 5G5?' 15-1'5$5F' 614 E' -A'?' 41F51(' '-' ?-' ' D4??5??5F' 2' F'?D14D41-'4&2-5' @5'GA-' '&' -A5' D4 '-':2 ' +2 2&:5 ' A5' G152-' 41F?' ?-' ' : 2'E5F' ?4E5' 46' -A5' E4?-' :4&?'F512+ 5' D4?-?(' +4-A' :'$' ' 2&F' E' '-21C 9' A5'1' 15$5&*5?' @515' 'E E5&?5(' 2&F' -A5'1' +142F' 2&F?' :4$515F' *&+14H5&' 52G*5?' 46' 5J-5&-' '&' 5$51C' M*21-51' 46' -A5' H'&GF4E 6' A5' M*55&(' @A4

I' &?' * ' J$+ - ' G ' ? ' *'8 $ ' ?$ & ' *' /L +# $ ' $ /' *' $0 ' *' $ L # ' ? '*# ' *' ? '$ &# ' **#& ' G$ ' - +$ >' # /' 0>' $0 $' G# ?' ?$ ' *' &?L 0# ? -' *' / ' ? ' **#& ' *' /+# $ '0 &$+ '? /# $ >'$* ' 6 >' '# ' ? ' 0 '*$+# >' *' #, K'$ /' ?$ ' *' $L 0 ' # ' ? ' ? ' *' : $ & ' ? "?' *'" $ '$? # >'$ /' #+ - $ & ' # ' ? # ' #"# ' $ /' # / / ' # ' ? ' #+ ' *' ? ' $L ? #&' ' #" ' ? ' - ' " $/ $ >' $* '0 & +# "' ? L /# $ >' / & # /'# '+ ' # $ ' /#" # # ' $ K ' / ' / K$' #" #/$/ ' #0 ' ## ' &$- ' '### ' J <' #0 ' ### ' &$- ' JJ# A ' $ # ' $ ' + $0 ' * 'F(X' ? ' D ' *' *$ $/ ' ? $/' *' ? ' $ &# ' ? ' *' / K$' G? ' $ ' $>' # ' $ # ' $ /' # / /' # ' + ' *' ? ' - '# & ' *' ? ' D# "/ + ' #' / & #0 /' 0>' $'$"# ' $' #'L # "! ' " $ ' +$" #*#& & ' 6 ' +$# $# /' $' 0 />=" $ /' *'FEE' * ' 0 #/ ' + =$ =$ + <' $ /' & /' + ' + ' ?$ ' 3E EEE' '$ $ ' :#$""# ' * 'B' 44 .' '# / ' +$D ' ? ' $+ ' $ L + ' ; # & $" $ ' ' $

2' , # &' 2' /#$ ' 3 .' &# ' $ # ' $+ "' ? ' ?# " '# ' ?# ' & # ' * + ' ?$ ' "#' ' $ ' #+$ ' *' ? ' ' R'- & ' +$ 'B' + V' *' ? '" $ ' L 0# # >' *' $ # ' $ /' $" ' G? ' G? ' 0$+ ' ? ' & +L - ' $ ' = ?# /' *' ? ' *' ? 'G? ' D# "/ + ' 'G# ' L & '$' * G' *' ? ' $+ '*$+ # #$ ' ' '# ' ? '- ' $ $ #' ' #, K' / + # $ ' *' $ # -, , , ,' / &$ '# & + ' , $' ' ((E EEE' / $: $ & ' $0 ' *' $ # BE EEE'/ &$ # & + <' $ ' # ' /' $ # / ' D ' *' '$ ' @E EEE' / &$ # & + <' $ '# ' $ L # '$ /' $'$ / K$' D ' *' *$ $/ ' @E EEE/ &$ '# & + <' $ ' # ' $ # '$ /' ? '- '# & ' 8 K+$ ' D ' *' /# $' #/ =' #$' B@ EEE' / &$ '# & + <' $ '# ' /$ #$ /$' D ' *' /# $' 4E EEE'/ &$ # & + <' $ ' # ' $ # '$ /' /$ #$ &' / ' ' D ' *' & F@ EEE'/ &$ '# & + <' $ ' # ' /$ #$ $&? & ' D ' *' &$ $' $, #' *' : # $.' BE EEE

; ‘ ‘

J5215F‘ E 2&C‘ 46‘ -A5'1‘ :A' F15&‘ '&‘ -A5‘ 14C2 ‘ D2 2:5‘ *&F51‘ A51‘ 4@&‘ 5C5(‘ 5&F52$4*15F‘ -4‘ F12@‘ A51‘ D4-5&-‘ $2??2 ?‘ -4‘ -A5‘ :4*1-‘N9‘ +*-‘ E 2&C(‘ ?-' ‘ :A51'?A'&G‘ -A5‘ 2&:'5&-‘ ?D'1'-‘ 46‘ '&F5D5&F5&:5(‘ D1565115F‘ -4‘ '$5‘ '& 65*F2 ‘ G12&F5*1(‘ ?*114*&F5F‘ +C‘ -A5'1‘ 15-2'&51?‘ '& -A5'1‘ ?-14&G‘ :2?- 5?(‘ 2&F‘ @2'-‘ -A515(‘ '& G1'E‘ 15D4?5(‘ -A5‘ A4*1‘ @A5&‘ -A5C‘ E 'GA-‘ ?2 C‘ 641-A‘ 2&F‘ 152??51-‘ +C‘ 2112?‘ -A5'1‘ F5?D4' 5F‘ 2*-A41'-C ‘ *:A‘ 2‘ ?52?4&‘ 4::*115F‘ 4&‘ ?2+5 20?‘ F52-A ‘ A5‘ @21 'H5‘ &4+ 5?‘ 52G51 C‘ ?5'L5F‘ '-N‘ +*-‘ -A5‘ @' C‘ 2&F‘ 15?4 *-5‘ 51B F'&2&F(‘ 2&F‘ 26-51@21F?‘ -A5‘ '14&‘ A2&F‘ 46‘ Z'E 5&5?(‘ H5D-‘ -A5E‘ '&‘ :A5:H(‘ 2&F‘ D15D215F‘ -A5‘ @2C‘ 641‘ -A5‘ F5?D4-'?E‘ 46‘ A21 5?‘ -A5‘ '6-A(‘ 14*&F‘ @A4E‘ -A5‘ A2*GA-C‘ 21'?-4:12:C‘ 46‘ 2?-' 5(‘ ?A41&‘ 46‘ ?*+?-2&-'2‘ D4@51(‘ @515‘ :4&-5&-‘ -4‘ 15$4 $5‘ 2?‘ -A5‘ ?2-5 '-5?‘ 46‘ 2‘ :4*1-(‘ 156 5:-'&G‘ 4& C‘ -A5‘ +4114@5F‘ ?D 5&F4*1?‘ 46‘ 14C2 -C

/ &$ ‘ # & + <‘ $ ‘ # ‘ $ #
/ '$‘ D ‘ *‘ $‘BE EEE‘
/ &$ ‘# & + <‘ $ ‘# ‘ $L
- ‘$ /‘ /$ #$
" # $ ‘ $, # ‘ *‘ # "
(E EEE‘/ &$ # & + <‘ $ ‘
‘ /$ #$‘$ /‘ +$=‘
/ $
/ K$‘ ‘ *‘ /# $‘
2@ EEE/ &$ ‘# & + <‘ $ ‘
‘ $
#+ ‘ ‘ *‘ $' ‘
BE / &$ ‘# & + <‘ $ ‘
‘ $
8# ‘ ‘ *‘ $‘FE EEE‘
/ &$ ‘ # & + <‘ $ ‘ # ‘
/$ #$
'$‘ ‘ *‘ #*

2E EEE/ &$ ‘# & + <‘ $ ‘
‘ /$ #$
$ ‘ + $0 ‘* ‘F(‘F@ .‘
? ‘ #+$ ‘ # ‘ & *# + /‘
G# ?‘ + ‘ #"?‘ /# & -$ & ‘
0>‘ $'$"# ‘ :#$""# ‘ * ‘23‘
4‘ ‘$#O#‘ ‘$ ‘ $$K$‘
/‘ / K$‘ #" #/$/ ‘ /# =‘
& I‘##
I‘R‘ ‘ &$ $‘ / ‘ $, ‘
+&#- ‘ 0‘$‘?#!$‘/ ‘ ‘
- # &#-$ ‘ ## ‘B‘&$'$ ‘
- ‘/$+$‘/‘$‘ > $‘B‘/‘$‘
*$ $‘ ‘?#!$‘>‘ ‘$‘& ‘
$ /0‘ / ‘ ‘+$> $K" ‘>‘
?#! ‘/‘" $ / ‘B‘ ‘+$‘? =‘
/$/ ‘/‘ ‘ > V‘ '# / ‘
; # & $" $ ‘ ‘ $‘2‘, # &‘
(‘/#$‘((

; ;

-2'&5F(2?' @5' A2$5' 46-5&' A2F' 4::2?'4&' -4' &4-':5(' -A5'
?2E5' '&F5D5&F5&-' 2--'-*F5' C' -A5' :5 5+12-5F' :4&.'
(:41F2-' E2F5' @'-A' 'J-*?' -A5' 4*1-A(' '&' <=S;(' -A5'
D4D5' :4&:5F5F' -4' -A5' ?4$515'G&?' -A5' 1'GA-' 46' &4E'B
&2-'&G' -4' -A5' A'GA51' F'G&'-'5?' 46' -A5' :A*1:A 9' A5'
4 C' 55(' A4@5$5'0(' ?-' ' 2??*E5F' -A5' :4 2-'4&' -4'
'&651'41' +5&56':5?(' @A':A' @515' -44' 46-5&' 2$'?A5F'
4&' &4&.15?'F5&-?(' 2&F' 4-A51@'?5' *&?*'-2+ 5' D51?4&?'
A5' M*55&' ?4E5-'E5?' 5J-41-5F' 2' D2D2' '&F* G5&:5'
G12&-'&G' -A5' 1'GA-' 46' D15?5&-2-'4&' 641' 2' 'E'-5F'
-'& 5N' 4&' @A':A' 4::2?'4&?' ?A5' ?A4@5F' ?*:A' 2 2:1'-C('
-A2-' ?A5' '?' H&4@&' -4' A2$5' F'?D4?5F(' '&' 2' ?'&G 5' F2C('
46' E415' -A2&' -@5&-C' D15+5&F?' 2&F' '&651'41' F'G&'-'5?'
-' 4-A51' -'E5?(' @A5&' -A5' &4E'&2-'4&' E2F5' +C' A'?'
4 '&5??(' 2?' &4-' *&615M*5&- C' A2DD5&5F(' @2?' F'?-2?-5B
6*' -4' A51(' ?A5' @4*F' -2H5' :215' -4' F5652-' '-' +C' 641B
+'FF'&G' -A5' +*' -4' +5' D*+ '?A5F' *&-'' 2'F' +56415' -A5'
D1'$C' :4*&:'N' 2-' -A5' ?2E5' -'E5' ?5M*5?-12-'&G' -A5'
15$5&*5?' 46' -A5' $2:2&-' +5&56':5' -' ' A51' 4@&' 15M*'?'B
-'4&?' ,$515' :4ED '5F' @'-A 60

A5' @2?' 5M*2 C' ?4 ':'-4*?' '&' @2-:A'&G' 4$51' -A5'
12D1U(' 46.-A5d: 51GC(' '&:* :2-'&G' 4&' -A5' A'GA51' D15B
2-5?' -4' A4 F' 615M*5&-' D2?-412' :4EE*&':2-'4&' @'-A'
-A5'1' ?*6612G2&?(' 2&F' -4' 15D41-' -4' A51' ?*:A' 2?' @515'
F5 '&M*5&-U' C' -A5?5' $'G' 2&-' E52?*15?' ?A5' ?*:.

? #'$-- #&$ # ' ' ?# /' ? +' X' ' J$+- ' *' ?# ' #'
* +' ?' & $&?+ ' *' ?' # ' * + ' $- /' +$ $ #'
&#'#' #0 $ ' # ' * + ' /# ' +'###' --'5@A 2EF'
$- /' +$ $ #' /# ' +' A $"+$ #&$' / ' > ' * '
###' --1' 53' 55 2(
9' 55 21-' ' :A2D-51 $'' 46 ' # ' * + '$- /' +$L
-A'? '?-41C $ #' /# ' +'###' -'5(A

:55F5F '& 15?-41'&G -A5 2&:'5&- F'?:'D '&5 46 -A5 :A*1:A(2&F @55F'&G 4*- -A5 ?5&?*2 '-C 2&F '&F4B 5&:5 @A':A A2F ?4 4&G F56'5F ' -N @A' 5 ?A5 A2F -A5 '&5JD15??'+ 5 ?2-'?62:-'4& -4 ?55 -A5 D1'&:'D2 D 2:5?(4&G +56415 A51 F52-A(4::*D'5F +C D15 2-5? @A4?5 521&'&G 2&F 15 'G'4*? D1'&:'D 5 G2$5 -A5 +5?- 2??*12&:5 46 -A5 ?-2+' '-C 46 -A5 15641E2-'4& 9 5@ 46 -A5 2?-' '2& E4&21:A? A2$5 +55& +14*GA- E415 615M*5&- C '&-4 :4 '?'4&(41 D*1?*5F 2 +4 F51 D4 ':C(@'-A -A5 :4*1- 46 4E5 -' 65@51 A2$5 5J-41-5F 614E '- ?*:A 'ED41-2&- G12:5? 2&F :4&:5??'4&?N 2 :'1:*E?-2&:5 @A':A :2& 4& C +5 'ED*-5F(?2C? 2 2?-' '2& @1'-51(R -4 ?'&G* 21 G44F 641-*&5 2&F :4&?*EE2-5 D1*F5&:56 -4 -A2- F55D :4&$':-'4& 46 -A5 M*55&0? '&-5G1'-C(@5 E2C 2?4 2FF(@A':A F'?21E5F 15?'?-2&:5(5$5&' '& A51 5&5E'5?

A5 :4&F'-'4& 46 -A5 :4EEG&? *&F51 -A'? 15'G& @2? D14+2+ C(4& -A5 @A4 5(E415 D14?D514*? -A2& '&U&Cd4-A51 D51'4FdM6 -A5 D2&'?A A'?-41C 5@ 2$5&*5? -4 @52 -A 2&F A4&4*1? @515 4D5&5F -4 -A5E N 2&F D51?4&? 2&F D14D51-C @515 2 'H5 D14.

$ # $ + $0 / # V ; # & $" $
* 23F /#$ / $ $' $
I '# / 0 $ +-?$ #&
#+ > ? U = ! , / 0 $/+# $
+- ?$?$0#/ = , & /#$& $ $ $/ 0 =
-$ $/ $ $&# '" $ / & /#$& $ $ $/ 0 =
'$ $/ J& '# > / $ $ $
$/ >' #"# >'- $ / +$ " $&#$ >'- #'# "#
, - ?$0##/$/ >' &#= , # " / & <
&#$?M 0#/ $ +$ - 0$ / * #&#/$/ >' / $
$ $ /#" #/$/ / $- / #+$ & / & $V # $
K 0# -$/ >' / , +$ * #' $- / # $ $ # L
- 0/ $ &$ K$ $ " #$ /# + ###'-'5@

-5:-5F *&F51 -A5 6521 5?? 2&F 'ED21-'2 2FE'&'?-12B
-'4& 46 -A5 2@ RU*:A @2? -A5 ,*?-':5 F'?D5&?5F
-4 5$51C 4&5 *&F51 -A'? 2*?D':'4*? 15'G&#0 5J: 2'E?
21'&254(R -A2- &4+ 5? 2&F :2$2 '51?(:'-'L5&? 2&F
2+4*151?(1':A 2&F D441(E2?-51? 2&F ?51$2&-?(2
5M*2 C D21-44H 46 '-K 5 6'&F &4 :4ED 2'&-? 46
21+'-121C 'ED1'?4&E5&-M 2&F &4 2--5ED-?(?4 615B
M*5&- +4-A '& 521 '51 2&F 2-51 -'E5?(2- ' 5G2 -2JB
2-'4& & -A'? D21-':* 21('&F55F(?2+5 2 E2&'65?-5F
-A5 G152-5?- -5&F51&5?? 641 A51 D54D 5 C A51 :4EB
E*-2-'4& 46 -A5 :2D1':'4*? -2J 46 -A5 + 641 2
F5-51E'&2-5 4&5(2&F ?-' E415 +C -12&?6511'&G '-?
:4 5:-'4& 614E -A5 15$5&*5 466':51? -4 -A5 :'-'L5&?
-A5E?5 $5?(?A5 G152- C 15 '5$5F A51 ?*+,5:-?U

'&2 C(&4-@'-A?-2&F'&G -A5 D51D5-*2 :2 641
-144D? 641 -A5 E'-21C 4D5'02-'4&? '& @A':A -A5
G4$51&E5&- @2? :4&?-2&-C 5&G2G5F(2&F &4-@'-A.

I ! , $#" $#/$/ / $
! #&#$, 0# $ $/
&#- ?$K#$ $ $ $,
/ ? +0 / , $, #
& /#&# , * $ $
0 > &$ $ $ $ -
0 > > $0 $/ > #&
- 0 *$& * $
, $$! #&#$
&$ $ / * #" $ V
$ + $0 * 23E

? 0 *#&#$ &?$ " M
G +$/ G# ? ? $/'#&
$ / ? "? ? $" &> *H#
+ 8 + K 0
8 # * F(A ; # $ # $
&? >- -'# #. ? ?
+ & $ $J * = ? $
$ * *- - > - / & /

E415 -A2& 2&C 4-A51 +12&:A 46
-A5 15$5&*5 ? '-@2? 41'GB
&2 C F5?'G&5F(E415 -A2& 2
:5&-*1C +56415(-4 6*1&'?A 6*&F?
641 -A5 441'?A @21(?2+5 2(
2? @5 A2$5 ?55& '& A51 -5?-2B
E5&-(5&-51-2'&5F G152- ?:1*D5?
2? -4 -A5 1'GA- -4 :4&-'&*5 '-(
@'-A4*- -A5 :4&61E2-'4& 46 -A5
D54D5(26-51 -A2- @2? -51E'B
&2-5F Z'E5&5? 15:4EE5&F5F
'-?'[2+4'-'4&(@'-A4*- 2&C M*2B
'6':2-'4&(-4 A215? +*- '&
$2'& /'F5E 2*:-*+ ?*D127
A2-5$51 +5 -A4*GA- 46 '-? 5B
G2'-C(-6'515 :2& +5 &4 F4*+- '-
@2? 4&5 46 -A5 E4?- ?*:-5??6*
E52&? 5$51F5$'?5F +C 2 G4$51&8
E5&- 641 ?A2:H'&G -A5 '&F*?-1C
2&F 5&-51D1'?5 46 '-? ?*+,5:-?

?-2&F'&G -A5 5J2ED 5 46 -'5'GA+4*1'&G :4*&-1'5?(-A515 @2? &4 2--5ED-' -4 5?-2+ '?A -A2-' '14&' +* @21H 46 F5?D4-'?E(2 ?-2&F'&G 21EC N 2-' 52?-(&4&5' &52151 -A2&' -A2-' 46 -A5 $4 *&-21C 5$'5?' 46 -A5 A51E2&F2F(12'?5F 2&F D2'F +C -A5 D54D 5 A5 M*55&' &5$51 2FE'--5F -A5 21+'-121C E2J'E?' 46 Z'E5&5?' '&' 15G21F -4 -A5 64*&F2-'4&' 46 G4$51&E5&-' 51?' @2?' 5??5&.' -'2 C 4&5 46 4D'&'4&(&4-' 641:5 9 2F '-' 15?-5F 4&' 2&C 4-A51 -A2&' -A5 +142F +2?'?' 46 D*+ ':' 4D'&'4&('-' :4* F &4-' A2$5 @'-A?-44F 2 F2C -A5 $'4 5&-' ?A4:H?' -4 @A':A '-' @2?' 521C 5JD4?5F(&41 A2$5 2:A'5$5F -A5 'ED41-2&-' 15$4 *-'4&' -A2-' '-' 6'&2 C F'F(+4-A '&' -A5 F4E5?-':' 2&F 6415'G&' :4&:51&?' 46 -A5 :4*&-1C

A5 :4&F'-'4&' 46 -A5 H'&GF4E(4&' ?2+5 20?' 2:B :5??'4&(&5:5??21' C G2$5 -A5 :4EE4&?' *&@4&-5F U 4&?'F512-'4&' &' -A5 -4--51'&G ?-2-5 46 A51 2662'1?( )?A5 @2?' 4+ 'G5F -4 15?-' 4&' -A5'1 ?-14&G 21E 641 ?*D.' 5D41-' -' F'F &4-' 62' ' A51 ' A155 ?5??'4&?' 46 -A5 5G'? 2-*15(41 12-A51 -A5 D4D* 21 +12&:A 46 '-(@515 A5 F F*1'&G -A5 -@4 6'1?-' C521?' 46 A51 15'G&' -' @2?' '&' -A5?5 521C 2??5E+ '5?' -A2-' -A5 :4EE4&?' +415 2&

I ' - $"+$ #& G$ ' # / ' - +0 ' 23 ?' 2(5@' - = & #0# '" ?' G $- ' $ /' ?' $ ' * '$ " $ ' $# # '" *' ?' +# # #$' ?' - $+0 ' / = /$ ' ?$'#'G$' +$/' $' ?' # $ & ' *' ?' - $ #' ' *' ?' &# # ' $ /' ?' 0 ' G?' & +- $# /' ?$' # ' & = , & ' *' ?' $, # #> G?#&?' ?' D# "/ +' ? "?' ?' /#'# ' + &>' ?$/' * ' + ' > $ ' ! > /' ?' - - ' G ' ' >' " $ > - '#/ /' G# ?' $ + ' ** #' ' ' / * #' ' ?$'# '" /' ' ** /' ? +' ' *$' # ' / &$>' # + &?' ?$ ' # ' ? # '- ' & /# # ' ? > G /' 0 ' * /' G? >' - L -$ /' ' + ' # ? ' / + #& /# 0$ & ' '* #" ' # '$ # ' $"+M #&$ ' / ' !+ ' * ' 34 .' 7?$' $ #0 ' / ' ?# ' $** /'# ' ?# ' $" ' *' '# & ' ' ?' +# /' -$ $'&?$ $& ' *' ?' $/+# # $ # %

;

2:-'$5 D21- '& :4&:4:-'&G -A5 @A4 5?4E5 ?C?-5E 46 2@? @A':A 15?-415F $'-2 '-C 2&F $'G4*1 -4 -A5 5JB A2*?-5F 15D*+ ': 9

6-51 -A'? G44F @41H @2? 2:A'5$5F(-A5 ?5??'4&? 46 -A2- +4FC +5:2E5 E415 1215M A515 @2?(5?? 4::2?'4& 641 -A5E('&F55F(F*1'&G -A5 5J'?-5&:5" 46 -A5 A51E2&F2F(@A':A @2?(46 '-?5 6(21- D 5Q15D15B ?5&-2-'4& 46-A5 2?-' '2& :4EE4&?(2&F @A':A(+C 5&641:'&G 4+5F'5&:5 -4 -A5 2@ 2- A4E5(2&F +C '+512 ?*DD '5? 641 6415'G& @21(?*D51?5F5F('& 2 G152- F5G155(-A5 :2 641 E415 15G* 21 E55-'&G? 46 :41-5?",# A5 A2+'-*2 5:4&4EC(-44(&4- -4 ?2C 61*G2 '-C(@A':A 15G* 2-5F -A5 D*+ ':2? @5 2? D1'B $2-5 5JD5&F'-*15 46 -A5 ?4$515'G&?(5&2+ 5F -A5E(26-51 -A'? D51'4F(@'-A 4::2?'4&2 5J:5D-'4&?(-4 F'?B D5&?5 @'-A 4-A51 2'F -A2& -A2- F12@& 614E -A5 15B G* 21 15$5&*5? 46 -A5 :14@&

A515 '? 5$51C G14*&F 641 +5 '5$'&G -A2- -A5 D4B '-':2 612&:A'?5? 46 -A5 D54D 5(2? -A5& *&F51?-44F(@515 *&'641E C 15?D5:-5F A5 &*E+51 46 :'-'5? ?*EE4&5F -4 :41-5?(@A':A A2F ?4 46-5& $21'5F 2:B :41F'&G -4 -A5 :2D1':5 46 D1'&:5?(&5$51 65 ?A41- 46 -A2- D15?:1'+5F +C 4&G *?2G5 & -A5 :4&-121C(2& 2FF'-'4& @2? E2F5 +C -A5 :4&M*5?- 46 12&2F2N

I ? + #+- $ G - # &#-# +$> $ + >
? *' $/ #"$ '# '2()B $ /' $ " / $P # - / =
*' / ' # ' 2(3E ' G?#&?T &#$(# &# / ' -
' ?$' ' * ' ?$/' &&$ # ' ' 52 .' $ # $ #& ' ?#'& '
* ' R' $ ' +$ ' $0 V G# ?' , $ ' -$ "> #&' #$'
$>' ' $ /' $ ' # ' L +'#' -') @ .' ' $ ' +=
* & ' ' ? ' $ ' U'>' *$+ =' - ' 6# ' / ' ' -' 25)
$' / ' ' > $/ ' ' ', $' X' ' $ ' ' &?$- ' J'
- / + ' $ " $ ' , ' ' J#' '$#0#

2&F('&' 2' :41-5?' A5 F' ?44&' A6-51' -A5' M*55&0?' F52-A(@5' 6'&F' 2' E4?-' A2114@' 2&F' 'ED4 '-':' 15E4&?-12&:5' 46' -A5' 5G'? 2-*15' '-?5 6(2G2'&?-' -A5' 2 5G5F' *&B 2*-A41'L5F' 5J-5&?'4&'(46' -A5' D1'$' 5G5' 46' 15D15?5&-2B -'4& 9

&' 4&5'Ú15E21T2&'5' D21-':* 21(@A':A' E2C' +5' -A4*GA-' 4' 641E' 2' E2-51'2' 5J:5D-'4&' -4' -A5' 2?-' 4+?51$2-'4&?(Q-A5' :4&F*:-' 46' -A5' :14@&' F5?51$5?' -4' +5' &4-':5F' A'?' @2?' -A5' D14E* G2-'4&' 46' ' ;? '

(& 41' 14C2' 41F'&2&:5?(2&F' -A2-' -4' 2' G152-51' 5J-5&-(D14+2+ C(-A2&' *&F51' 2&C' 4-A51' 15'G&(+5B 6415' 41' ?'&:5' A'?' 'ED41-2&-' D1514G2-'$5' @2?' :2'E5F' 2&F' 5J51:'?5F(E415' 41' 5??' 6155 C(+C' E4?-' *14D52&' ?4$515'G&?' '&' 2&:'5&-' -'E5?' 4-A'&G' :4* F' +5' E415' &2-*12' -A2&' -A2-' -A5' D1'&:5' ?A4* F' 2??*E5' ?*:A' 2*-A41'-C' 41' -A2-' -A5' D54D 5(+ '&F' -4' -A5' * -'E2-5' :4&?5M*5&:5?(2&F' 'ED2-'5&-' 46' 4&G' 41' 615M*5&-' ?5??'4&?' 46' -A5' 5G'? 2-*15(?A4* F' 2:B M*'5?:5' '&' -A5' -5ED512-5' *?5' 46' '-' ?' 621' 2?' -A5?5' 41F'&2&:5?' @515' 46' 2&' 5J5:*-'$5' :A212:-51(41' F5B ?'G&5F' 2?' ?*DD 5E5&-21C' -4' D21 '2E5&-21C' 5&2:-B E5&-?(41' '&' 4+5F'5&:5' -4' D15$'4*?' ?*GG5?-'4&?' 46

1' ' :$ $/ #/(# ' 2@EB' ! ># "' = ?' - #'# " ' - ' ?' +0 ' *' &# # ' ?$'# "' -# ' -# ' &&&& J.' "$ (' #"?' *' - $# ' U , ' #+$ ' ? G ' ' #' & 0 L $& +0 $ '& # $+ ' +=' $ /' 0>' ?' - # # ' *' ?' 0#$' - & $/ ' $'& V' $&L & ' *' :$ $/ #/' G?#&?' G# ?' & /# "' ' "$ ' G$' ' L + ' ?$' $' ** >' ' > ' $ #& ' &$-' G /' #+#' ?' - $# ' J&' .' ?#' G$' 0 * ' 8 $ $/$ ' #"? ' &# # ' $' - & #0 /' G$' $// /' $ > ' M' # # "' U - ' $ " $' > ' '# + + L + ' > $ ' $* ' ?$' ' ' #$' V' $ # $' $' + ' + $ ' >' #J ' $' L #' -' 2B2

; S

41-5?(-A5C 2DD521 -4 T5 4D5& -4 &4 :4&?-'-*-'4&2 4+,5:-'4&?' '& 2?-' 5 9 *-' '- @2?' &4-' 'H5 C -A2-' 'E'-?(?4E5@A2- 44?5 C F56'&5F(@4* F +5 $51C &':5 C 4+?51$5F 2&F *&F51 D15:5F'&G 15'G&?' -A'?' +12&:A 46 D1514G2-'$5 A2F +55& E4?-' '&-4 512+ C 2+*?5F(-

21G5 D14D41-'4& 46 -A5?5 2@?' 215 46 2& 5:4B &4E':2 :A212:-51(F5?'G&5F -4 64?-51 -12F5 2&F E2&*62:-*15?(2&F -4 ?5:*15 62'1&5??' '& :4EE51:'2 F52 '&G? 2&C 215 F'15:-5F 2G2'&?-' -A5 G14@'&G

I $ > *' ? ' ; (- - '# ' ? # '- $+0 ' '0 ' +$/ '$ ' ? ' / +$ /' *' & ' +$ >' + ' $ ' ? ' - # # ' *' & - $ # ' '# /#'#/ $ ' $ /' +$ >' * +' ? ' " /' - $ ' *' ?' ' #" '0 /' 'U' + L />' $ ' " # '$ & ' $ /' - '#/ ' * ' ? ' J#" &# ' *' ? ' $ R' ? ' /# $ & ' ' >' * , L >' $ ' $ /' ' ?$' '0 ' +$/ ' G# ?' I ? ' $/'#& ' *' ? ' >$' & &# ' ? >' G ' - &$#+ /' # ' ? ' - 0 #&' , $ ' *' ? '&# >' # ' G?#&?' ? >' G ' J & /' $ /' $* G$ / ' # ' ? ' *' ? ' - # &#-$' G ' # ' ? 'D# "/ + ' ? ' & ' ' $ /' $ ' /#'#/ ' ' ; (' # ' G ' & $ ' ? ' +$/ ' $ ' ? ' # L $ & ' *'& ' $ /' ? ' +$L $ # '"* +' ? ' !' ' #" ' $ ' () ' ' ; (' *' ? 'D# "=' '/ + ' + ' /' 0>' ?# ' $ J# >' * ' ? '& + + 'G $ V' !' &?$ '/ 'V ' " V' ? >' $//' 'U'& = # ' ' #0 ' $ ' # # $/ ' ; (' 'S * & , ' ' #+- #+# ' $' - #+ $' ' K' ' L &$ $' ' 2@F3 V' # &#

/' -' 22E .' ?# '#' $ ' < A ' ' -' @4@' ' P' # * $=' *' U' ' $' - ' - +$ #=' &$= &# V' $#/' P ? ' '# ' ' *' ?# ' /# $ & ' ! ' & $' / ' ' &$/$' & $' / ' B' -$ ' / ' , # ' ' +$ / ' ' / ' , ' ' " $ / ' ' & + - $' /$, # $/ $ ' -$ $' # + -*' !$+$ ' ' /$ ' $ ' &#0/$/ ' @ '# $ ' ' "$ ' ' +0$ "$ '& $, # ' > ' ' * ' B' / &? ' @ / $=' +# ' & # &# ' 0' - =' # ' ' - +$ # $ = &# ' B' '0' & +0 ' &$' '& =' $ '$' ' $ $ '> ' ' $0 " ' ' / " V' $ # $' #$' + ' ## ' - ' F2B .' ?# ' G$ ' ? ' ' >' & ' *' / - # + ' $ /' P ? ' * /' # ' J- /# ' ' $&' ? ' J- # ' ' ? ' 0 L , ' + $ & ' *'& ;' &F55F('=' '? @41-AC 46 15B E21H(2? 5$'&:'&G -A5 D14G15?? 46 :'$' 'L2-'4& *&F51 -A'? 15'G&(-A2-' E4?-' 46 -A5 :1'E'&2' 5G'?B 2-'4& '? -4 +5 1565115F' -4 '-? :4EE5&:5E5&-(@A' 5 -A5 2@? 46 -A5 ?*+?5M*5&-' D51'4F' :A'56 C :4&:5E' -A5 &5@ 15 2-'4&? @A':A

?D'1'-' 46' *J*1C(' 2&F' E2&C' E415' 4::*D'5F' @'-A' -A5' 41G2&'L2-'4&' 46' -A5' D*+ ':' -1'+*&2 ?' A2-5$51' +5' -A4*GA-' 46' -A5'1' @'?F4E' '&' ?4E5' :2?5?(' '-' @' ' &4-' +5' 52?C' -4' F5-5:-' 2&C' 2--5ED-' -4' '&&4$2-5' 4&' -A5' ?5-- 5F' D1'&:'D 5?' 46' :1'E'&2 ' ,*1'?D1*F5&:5(' 41' 4&' -A4?5' 15G* 2-'&G' -A5' -12&?651' 46' D14D51-C' A5&' -A5?5' @515' -4' +5' F'?:*??5F(' -A5' ?4$515'G&?' @515' :2156*' -4' :2 ' '&' -A5' 2'F' 46'-A5' 5G'? 2-*15'M 2&' 5JB 2ED 5' @A':A' 64*&F' '-- 5' 62$4*1' @'-A' -A5'1' ?*::5?B ?41? 9' -' '?' G44F' 5$'F5&:5' 46' -A5' D*+ ':' :4&6'F5&:5' '&' -A5' G4$51&E5&-(' 2&F' -A5' G5&512 C' +5&56':'2' ?:4D5' 46' -A5?5' 2@?(' -A2-(' 2 -A4*GA' 46' ?*:A' *&D15B :5F5&-5F' 615M*5&:C(' -A5C' ?A4* F' A2$5' 5?:2D5F' D21B '2E5&-21C' 2&'E2F$51?'4& ,9' *-(' A4@5$51' D2-1'4-':

" G' '*$'#&$/'/+ L #&'#/ >' '#'#' ?'U' =' /$$' $ V'$/'!' > ' /'$'6 +$ /$/V'0 ?'-0L #?/'0>'2(3@' ?$'G'+ ' D'*'?'+$ '$"$# ' '# &'$/'$-# ' ?'*' J$+-'?'#+L -$'&#+#$'$G'*'?' 6 +$ /$/'$/'?'&#'#'&/' &$ /'?'U' $G'*' V' 7 '+$/'/'?'J- ' $&#'*'?'&++ ' > ' /'$'6 +$ /$/'* '2A ; $=' /+'/'$' > '>' '$' 6&##/?&?$'>' /$/$' ' $' #/$/'/' 'n /#$'/' $+-'2@@@I'*'(5.' $ >' $'#*' '$'?'$&'*'?' $?#&' '#" '#/&/' #'?'*$+ '&/'*'?' U' /$$' $ V' G' -$ /'#'?'&' *' $/#= ' E

"$'#'2()B' '/'#' 2(3E ' '?/'0' $/'?GL ''?$'?'& '*':$$/L #/'#'2@EB' G'>$'$* '?', (' /$?' !#/' ?#-'$/'P$ $' +$D' ' $G'G#? '?'& '*' & <' + $#"'$'?' $+'#+'$"$# '?'J# L &'*+$ >' >$'' ; W ? (&$'$'-' ' '0' / /' U' '-' ' $0 &#' #' , ' ?#&# ' #' '$ ' > '#' '& ' I I I I I' '-, '* $'/' $'B/' ' ?$'?&?'+ &?$'- +$#&$/' , ' ' ' > ' ' # ' - '$" $'#$/ ' +$ /' , '$, $' ' '$'>' - =' '$'>' + /# ' '$" $'# ' , '$'$ '- +$#&$'# V' $#$' #$ +'##'-'F23.

;'

-A5 '&-5&-'4&? 46 -A5 2-A4 ': ?4$515'G&?(2&F A4@B 5$51 ?265(41 5$5&' ?2 *-21C(-A5 D4@51 '&-1*?-5F -4 ?*:A A2&F?('- @2? 2 62-2 D15:5F5&-(2&F *&F51 -A5 *?-1'2&' FC&2?-C +5:2E5 -A5 E4?-' 5665:-*2 5$51 641 4$51-*1&'&G -A5 '+51-'5? 46 -A5 &2-'4&

A5 D15:5F'&G 15E21H? 4& -A5 D4 ':C 4+?51$5F -4@21F? -A5 :4E E4&?' '& -A'? 15'G& E *?-' +5 6*1-A51 *&F51?-44F 2? 2DD C'&G @'-A 621 5?? M*2 '6':2-'4& -4 -A5 M*55& -A2& -4 A51 A*?+2&F A5 2--51(4@'&G D51A2D? -4 -A5 5??4&? @A':A A5 A2F F51'$5F 614E A'? 4@& ?*+,5:-? 46 12G4&(R @A4 &5$51 2+2-5F 4&5 ,4- 46 -A5'1 :4&?-'-*-'4&2 1'GA-?(K ?2C? 21-C1(99 2- -A5 :4E E2&F 46 2 H'&G(K9 2&F @A4?5 E55-B '&G? G5&512 C +14*GA- 65@51 ?*DD '5? -4 -A5 14C2 :46651? -A2& G1'5$2&:5? -4 15F15??(?55E? -4 A2$5 A2F '-- 5 15 '?A 641 D4D* 21 2??5E+ '5? 5 :4&B $5&5F -A5E 2? 1215 C 2? D4??'+ 5 '& 12G4&(6 2&F(@A5& A5 F'F(4E'--5F &4 56641- -4 '&6 *5&:5 -A5'1 F5 '+512-'4&? 5 2&-':'D2-5F(D51A2D?(?'E'21

A5-A51 -A'? '?-4 +5 *&F51?-44F 46 -A5 41F'&2&:5? 46 -A5 15'G&'&G ?4$515'G&?(41 -A5'1 D15F5:5??41?(E2C +5 F4*+-5F -' '? :51-2'&(-A2- -A5 &2-'4&(A4@5$51 '- E2C A2$5 2:M*'5?:5F '& - '5 5J51:'?5 46 -A'? D4@51 +C -A5 2-5 M*55& @4* F &4- A2$5 +55& :4&-5&- -4 15?'G& '- -4 ?*:A '&:4ED5-5&- A2&F? 2? -A4?5 46 A' 'D 2&F A'? :12LC @'65

9 R '+51 D2-1''? 5G'+*?(&' 'ED51'4 5G'? G*+5E2&-*1K D*? D'?- 5D'?-Ú ::::JJJ$''' 4 $**G#$ >'? G ' '#+/ = *# $ ' ? ' +0 ' G? ' ? ' #L +# '#' '* ' # ' >' / L # '" ?# ' G? ' #" ' $& #&$ >' # ' - ' BF P' ' ' '###' - ' 2FFo' I ' *' ?# ' 6# >' A '!' # , # ' $#, #/ V' $> ' $ > ' - $DL # '" *' $' & ' " $' ? /' $ ' K ' 0>' ; ' 8 +$# ' !' #0# & $' ! '# $ +- $ ' $ ' $' "#$' & $' , , $+' / 0 # J# #+$ ' , $+' /# = ' ' & ' ' / ' & = , # $ # *#$ ' , ' "#0 ' -$ '# ' J#" /# ' - & ## ' = ' $ # ' "# $', #/# ' & #= 0# ' ' J$ # +' - # # %=

;

+5 2F E '--5F(1215 5J:5D-'4& -4 -A5 *?*2 -5&41 46 A'? 2F E '&'?-12-'4& &F55F(-A5 E 4?- A4&4*12+ 5 -5?-'E 4&C '? +41&5 -4 '-? G5&512 5M*'-C 2&F D2-1'4-B '?E(+C 2 :41-5? :4&$5&5F ?44& 26-51 -A5 M*55&0? F52-A(@A5& -A5 -1'+*-5(2? 621 2? ?A5 @2? :4&:51&5F(?-' E 415 *&5M*'$4:2 C(E *?- A2$5 +55& ?'&:515 9 ?'E' 21 -5?-'E 4&C '? 26641F5F +C -A5 D2&5GC1':? 2&F -A5 D12:-':5 46 -A5 E 415 '+512 2?-' '2& @1'-51?7 @A4 6155 C 15?41- -4 -A'? 15'G& 2? -A5 G152- 64*&-2'& 46 :4&?-'-*-'4&2 D15:5F5&-6

A5 :4E E4&? G2'&5F D4 '-':2 :4&?'F512-'4&(&4 F4*+-(+C -A5 F5D15??'4& 46 -A5 &4+ 5?N +*- -A5'1)U:A'56 G2'& 2C '& -A5 '&5?-'E2+ 5 + 5??'&G? 46 F4E5?B -':' -12&M*' '-C(2&F -A5 ?5:*1'-C 46 D1'$2-5 1'GA-?' A5 :14@& 2+?41+5F -A5 D4@51('& @A2-5$51 641E(15-1'5$5F 614E -A5 D1'$' 5G5F 41F51?N -A5 D5&?'4&? 2&F 21G5 F4E2'&?(-A5 &*E514*? 641-'6'5F D2:5?(-A5 1'GA-? 46 ?5'G&41'2 ,*1'?F':-'4&(-A5 :4E E2&F 46 -A5 E' '-21C 41F51?(2&F -A5 'H5 -A51 :'1:*EB ?-2&:5? :4&?D'15F -4 12'?5 -A5 15G2 2*-A41'-C ?-' A'GA51N 2?(641 5J2E D 5(-A5 '&-51&2-'4&2 15 2-'4&? -A5& 4D5&5F @'-A -A5 15?- 46 *14D5(@A':A(@A5-A51

? R > / V ? / + "? 'G # - $ /L ?# $ " $ " $" .! V - = >&# /0> + # # "? , $ > - & >?$ - / - # ? &# #K $ # $ / ?$K * > > >/ / $ G? ?$ / #' /' + # $L # - $ > + /$ / / '# M # *?# #0 $? > *? ? , & + - V Y& > / & # # * + ? #" * /# $ /' $ /' $0 $?$ 7 ?$ & /'P ? $ + $ > ? < $ /'G? #$ # & $#+ + % - - # > *-$ "> #& I ? $// * ? ? # U -$ $ " ' + V & # [$ # $ #$ + $ /' *& $ # "' # G# ? ? # - G > $ #&$ - #&> * $ #+

: 7 6

61'5&F C 41 A4?-' 5(@515 :4&F*:-5F +C -A5 E4&21:A 2 4&5(@A4(*& 5?? -4 4+-2'& ?*DD '5?(1215 C :4&F5B ?:5&F5F -4 ?55H -A5 '&-51$5&-'4& 46 -A5 4-A51 5?-2-5? -A5 :4&:5&-12-'4& 46 -A5 F'?E5E+515F D14$'&:5? 46 -A5 5&'&?* 2 *&F51 4&5 G4$51&E5&- -A5 'E E5&?5 2:M*'?'-'4&? 2+142F(@A5-A51 614E F'?:4$51C 41 :4&B M*5?-(15G21F5F '& -A2- F2C 2? -A5 D14D51-C 46 -A5 :14@&(12-A51 -A2& 46 -A5 &2-'4& 2&F(6'&2 C(-A5 :4&?'F512-'4& 6 4@'&G 614E -A5 D51?4&2 :A212:B -51(2&F 4&G ?*::5??6* 1* 5(46 -A5 2-A4 ': ?4$5B 15'G&? *:A @515 -A5 E2&'64 F :2*?5? @A':A(@'-A4*- -A5 'ED*-2-'4& 46 2 :1'E'&2 2E+'-'4&(41 '&F'66515&:5 -4 -A5 1'GA-? 46 -A51 ?*+,5:-?('& 51F'B &2&F 2&F ?2+5 2(2 :4E+'&5F -4 ?@5 -A5 D15B 14G2-'$5 -4 2& *&D15:5F5&-5F A5'GA- *&F51 -A5'1 15'G&

A'?('&F55F(@2? -A5 F'15:-'4& '& @A':A 2 -A5 G4$51&E5&-? 46 *14D5(2- -A'? D51'4F(@515 -5&FB '&G A5 D54D 5(@'?5 C D1566511'&G 2 ?'&G 5 E2?-51 -4 2 E * -'-*F5(?*?-2'&5F -A5 :14@&' '& '-? 5664 1-? -4 15:4$51 614E -A5 21'?-4:12:C -A5 5&41E4*? D4@51? '- ?4 G14?? C 2+*?5F A'? @2? -A5 15$4 *-'4& 46 -A5.U. 6'6-55&-A 2&F ?'J-55&-A :5&-*1'5? A5 D4@51 -A*? F5D4?'-5F '& 2 ?'&G 5 A2&F @2? 64*&F '& -'E5 5M*2 B C '&:4ED2-'+ 5 @'-A -A5 G152- 5&F? 46 :'$' G4$51&B E5&-(@A' 5 '- G12F*2 C 2::*E* 2-5F -4 2& 5J-5&- @A':A -A152-5&5F -4 :1*?A -A5 E4&21:AC +C '-? 4@&' 5'GA- *- -A5 '&?-'-*-'4&? F51'$5F 614E 2 5*B -4&': 41'G'& A2$5 +55& 64*&F -4 D4??5?? 2 :4&?51$2B -'$5 D1'&:'D 5(*&H&4@& -4 -A5 612G' 5 F5?D4-'?E? 46

=

- '5 2?- A5 ?55F? 46 '+51-C(-A4*GA F41E2&-(2C F55D '& -A5 A521- 46 -A5 &2-'4&(@2'-'&G 4& C -A5 G44F -'E5 -4 G51E'&2-5 A2- -'E5 A2? 2- 5&G-A 211'$5F 21G51 5JD51'5&:5(2&F 2 @'F51 E412 :* B -*15(A2$5 -2*GA- E5& &4- 4& C -A5 5J-5&- 46 -A5'1 D4 '-':2 1'GA-?(+*- -A5 +5?- @2C -4 ?5:*15 -A5E N 2&F '- '? -A5 152??51-'4& 46 -A5?5 +C -A5 G152- +4FC 46 -A5 D54D 5(@A':A &4@ :4&?-'-*-5? -A5 15$4 *-'4& G4'&G 641@21F '& E4?- 46 -A5 4 F :4EE*&'-'5? 46 *14D5 A5 D14G15?? 46 '+512 D1'&:'D 5? E*?- +5 :4&-14 5F(46 :4*1?5(+C -A5 D5:* '21 :'1:*E?-2&:5? 2&F :A212:-51 46 -A5 &2-'4&N +*- -A5'1 * -'E2-5 -1'B *EDA('& 5$51C M*21-51(&4&5 :2& 152?4&2+ C F'?B -1*?- 2C '- &4- +5 2+*?5F P

A5 D14?D51'-C 46 -A5 :4*&-1C *&F51 51F'&2&F 2&F ?2+5 2('-? G14@'&G -12F5 2&F &5@ '&-51&2 15.(2-'4&?(F5E2&F5F &5@ 15G* 2-'4&?(@A':A(2? +56415 &4-':5F(@515 2--5ED-5F -4 +5 ?*DD '5F +C -A5 ' ;?

(A'? @2? 2FF'&G(A4@5$51(-4 -A5 5E+21B 12??E5&-? 46 2 ,*1'?D1*F5&:5 2 152FC 621 -44 :*EB +14*? A5 2?-' '2& 2@C51 E'GA- F5?D2'1 46 2 :1'B -':2 2:M*2'&-2&:5 @'-A -A5 $4 *E'&4*? E2?? 46 5B G'? 2-'4&(@A':A('& -A5 641E 46 E*&':'D2 :A21-51?(4E2& :4F5?(D21 '2E5&-21C ?-2-*-5?(2&F 14C2 41B F'&2&:5?(@515 15:5'$5F 2? 2*-A41'-C '& -A5 :4*1-? 9 A5 E2&'64 F 5$' ? 15?* -'&G 614E -A'? *&?5-- 5F 2&F

I $ # $ + $ $> 6# #& = # #& 0 $?$ # -$ $ '& / *'&#'# #" $ "# $&# / $ # $ $ / + #&#-$ $G # $ # $/ #/ 23E3 .- - 434A 43B= 0> G?#&? ? "$ / &# # A '> $ # &# & G 0 " $ / # /#= / $ / $ / $0 $0 #+ =

A5?5 -@4 :4F5? * -A5156415 +5 15G21F5F 2? 5EB +12:'&G -A5 41F'&21C 5G'? 2-'4& 46 A51 15'G&

& < (-A5 :5 5+12-5F '-- 5 :4F5 :2 5F R 5C5? F5 414(K 614E -A5 D 2:5 @A515 -A5 :41-5? @2? A5 F(15:5'$5F -A5 ?2&:-'4& 46 -A2- +4FC 9 -? 2@?(5'GA-C.64*1 '& &*E+51(2&F F5?'G&5F 2? ?*DD 5E5&B -21C -4 -A4?5 2 152FC 5J'?-'&G(215 :A'56 C 4::*D'5F @'-A -A5 1'GA-? 46 '&A51'-2&:5 2&F E211'2G5 - '? A515 -A2- -A5 4E'&4*? -51E R E2C412LG4K E2C +5 ?2'F -4 A2$5 +55& &2-*12 'L5F '& 2?-' '2&,*1'?D1*.' F5&:5 6 A5 D5:* '21 652-*15 46 -A5?5 2@?(2GG12$2-5F '& &4 ? 'GA- F5G155 +C -A5 G 4??5? 46 -A5 :'$' '2&?(U '? -A5 62:' '-C @A':A -A5C G'$5 -4 5&-2' ?N 2 62-2 62:'B '-C(@A':A(:A'E'&G '& @'-A -A5 D1'F5 2&F '&F4 5&:5 &2-*12 -4 -A5 D2&'?A :A212:-51(12&H? -A5E 2E4&G -A5 E4?- 566':'5&- 2G5&-? 46 -A5 F5:2C 46 A*?+2&F1C 2&F -A5 G5&512 'ED4$51'?AE5&- 46 -A5 :4*&-1C

I U > / V $> ? $ /# $ / $+- # $ / $ U ' $/$ $ 2@@@ - 0$0 > ? $? / & , /# $G G 0 , > # & L / # + "$ / ' $#+# - $ /'# ? ! '$ & -#= 0 /$ $ / > R = $&# V # &# / -5@

? ?#0 + + #$ P ' $! * + '$ $ P U $ > V $> P ' L >' - + ! J- = $ R, ! # & /# / > " $ #$V $L $+$ @ 0 &$ $ # ! $ > / #/ 2)5@ 0$ 0$ $ + &? +$ - $ J # , - $"+$ #= ? ?$' 0 ' $ /#L & /# & + $= # * ?# & / # & ? *# # V * + -)B $. * 2@E@ $ # $ $> ? ? /# # * /# $ / (@E . ?$' & -# * $+- # ' 2@@@ # ' G /' 0> G /# # # ' 0 $&D ? & + + $ # * #" / / # ? * ? +D G $L #* # ? J # ? # $. $0 ' #& / - # L $ " $" * 0#0 # " $-? D / $ 'M # 2@FE $ / ? #D U&>+0$# & $ V

: 7 6

5?'F5?' -A5?5' :4F5?(' -A515' @515' -A5' R' 5C5?' F5' 2' 51E 2&F2F(K' ' -A5' R' b*2F51&4' F5' :2$2 2?(K' @'-A' 4-A51?' 46' 5??' &4-5' 641' -A5' 15G* 2-'4&' 46' -12F5(' &,2F5' '&' -A'?' 15'G& 6' *-' ?-' ' -A5' G152-' ?:A5E5' 46' 2' *&'..'' 641E' F'G5?-' 46' -A5' E*&':'D2' 2@' 46' 2?-' 5(' 2 -A4*GA' '-' 4::*D'5F' -A5' E4?-' F'?-'&G*'?A5F' ,*1'?:4&?* -?' 46' -A5' -'E5(' @2?' *&2--2'&5F' 2-' -A5' M*55&0?' F52-A ,' 4@' F55D C' '-' 5&G2G5F' A51' E'&F' '&' -A2-' A4*1' '?' 5$'&:5F' +C' -A5' :2*?5' '&' A51' :4F':'(' '&' @A':A' ?A5" +5M*52-A?' -A5' :4&?*EE2-'4&' 46' -A5' @41H(' 2?' 2&' 'EB D512-'$5' F*-C(' -4' A51' ?*::5??41?U' -' @2?' &4-' :4E.

I' ' $ ' ' &?$- ' '#' ' > ' / ' ; $/ ' ' ' / ' $' $' / ' $' &$'$$' >' $, K$' ? &?' ' $': "$' / '8 $ $/$' $$+$ &$' 2@@E.'<' $' # ' & / ' *' 4)' * # ' & L $# # '" 2()' $G'* ' ?' " $L # ' *' ?' & G ' ' ' G$' +$/' # ' ?' : "$' *'8 $L $/$' & +0 ' 2E' ?' 2(52' ?' " $ ' -$ ' *' ? ' $G ' #D' ' +$ >' ? ' *' ?#' #" ' ?$' ' 0 ' $/+# /' # ' ?' !' '$' & -# $&# V P' ' ?' ? $/' *' ? ' L / 0 / >' + ' 0' - $& /' ' * ' #$K' / ' $ ' ' L #& /' + ' ?$' ' &' # ' ?' & ' *' ?# ' 6# >' 6' # L $ /' ? ' && #' ' #" ' 0>' ?#' $0 ' G?#&?' ?' & L # /' ' ?' & ' *' $ "' #* ' $ /' $* ' ?' ?$/' 0 & +' 0 # /' ?' $? #& ' #" ' ?#"'? >' $-- &#$ /' ?#' '#& ' $ /' /' $' - # ' ' ?#+' *' 4E EEE' +$ $' /# ' #/ '?#' & 0 $ /' & +-# $ # (' *' ?' U' / $ M$$' $ V' ? 'G & ++ $ # ' ? ' $ &# ' & / ' *' ? ' !' ' $ V' $ /' ' ? ' R' # ' $ #/$ V' - # L /' * ' ? ' *# ' #+ ' / ' ?#' G ' > ' # ' 2(52' / K' >- " $-?#$' -$ $' - '234 .' $ # $' $> ' - ' (E@ .' ?$' 0 G /' $' 0 $ #* ' "# +' ' ?#' ' $0 ' $G> ' G? ' *# ' "$' ' #"?' ? ' - # &#-$' -$ # ?' & / ' $ /' # / & /' $' -# # ' *' & # #&# +' # ' ? ' $L # $' ! # - / &

g A'?' G'G2&-':' @41H' @2?' :4E E'--5F(' @A4 C' 41' '& D21-(' -4 1' 415&L4 2 '&F5L' F5' 21B +2,2' 5' 2+4*15F' E2&C' C521?' 4&' '-' +*-' -A5' 15?* -?' 46' A'?' 2B +4*1?(' 2?' 5?5@A515' &4-':5F(' A2$5' &5$51' +55&:4E E*&':2-5F' -4 -A5' D*+':' 55' ??4' C' 2B &*5(' &?-'-*:'4&5?(' DD' @E' 55' > 21'&2(' &?2C4(' DD' 45F' (EB A 2&F' 5E5&:'&(' @A4?5' *?-' 'J' 5JA'+'-?' 2' E4?-' :521' 2&F' ?2-'?62:-41C' $'5@' 46' -A5' 5G2' :4ED' 2-'4&?' *&F51' -A'?' 15'G&

S

D 5-5F -' -A5 15'G& 46 A' 'D -A5 5:4&F 2&F -A5(21G5 D14D41-'4& 46 51F'&2&F 2&F ?2+5 2 2@?(2F E'--5F '&-4 -A2- 62E4*? :4ED' 2-'4&(?A4@? -A5 D14?D5:-'$5 :A212:-51 46 -A5'1 5G'? 2-'4&(2&F -A5 *&:4EE4& F'?:51&E5&- @'-A @A':A '- @2? 2::4EB E4F2-5F -4 -A5 D5:* '21 G5&'*? 2&F @2&-? 46 -A5 &2-'4& 9

A5 'EE5&?5 '&:152?5 46 5ED'15(2&F -A5 :41B 15?D4&F'&G F5$5 4D5E5&- 46 -A5 &2-'4&2 15?4*1:5?(&4- 4& C F5E2&F5F &5@ 2@?(+*- 2 -A414*GA 15B 41G2&'L2-'4& 46 5$51C F5D21-E5&- 46 -A5 2FE'&'?B -12-'4& 2@? E2C +5 15:5'$5F 2? '&F':2-'&G -A5 F'?D4?'-'4&? 46 -A5 1* 51(@A5-A51 641 G44F 41 641 5$' +*-' '-' '? '& -A5 :4&F*:- 46 -A5 -1'+*&2 ? -A2- @5 215 -4 152F -A5 -1*5 :A212:-51 46 A'? G4$51&B E5&- - @2? -A5 *D1'GA- 2&F $'G' 2&- 2FE'&'?-12B -'4& 46 -A5?5 @A':A :4&?-'-*-5F -A5 +5?- :2'E 46 51F'&2&F 2&F ?2+5 2 -4 -A5 G12-'-*F5 46 -A5'1 :4*&-1C 4 62:' '-2-5 -A5 F5?D2-:A 46 +*?'&5??('- @2? F'?-1'+*-5F 2E4&G 2 &*E+51 46 +*152*? 41 :4*&:' ?(2- -A5 A52F 46 @A':A ?-44F -A5 R 14C2 :4*&:' K @A4?5 2*-A41'-C 2&F 6*&:-'4&? A2$5 2 152FC &4-':5F "P &' 41F51 -4 52$5 -A'? +4FC

I / $& C & ++ ? - 0 *- '#L 6 >: C $G +#"? $-- > / & * ? * +$D G# ? , $* & ? *L ? $ *?# - - # /# $ / / $0 $! L + $ / + ?$--><' $* $# >? # + * " / & +L ? +$ *? "# $ # + G $?C $G M / J& $ &# $ / ? #&$ #+ V I I I I I ?# $G G? 6# * 6 > : 7 D +$ D ? +G $ / -$ / / 2325 . : -BE +$/ - ? - * $ -$ #& $ &&$ # * X $ # &?$- '#

E415 5'?*15 641 '-? 5J5:*-' 5 F*-'5?(2 &5@ 2*F'B 5&:5(41 :A2&:51C(2? '-' @2? :2 5F(@2? 5?-2+ '?A5F 2- 2 2F4 'F '& <=_S (@A4?5 ,*FG5? @515 F12@& 614E -A5 E5E+51? 46 -A5 H'&G0? :4*&:' ' ?'E' 21 -1'+*&2 @2? '&?-'-*-5F(26-51 -A5 441'?A :4&M*5?-?('& -A5 ?4*-A51& F'$'?'4& 46 -A5 E4&21:AC 2&F +4-A A2F ?*D15E5,*1'?F':-'4& 4$51 2 :'$' :2*?5?(@A':A @515 :211'5F *D -4 -A5E 614E -A5 '&651'41 2*F'5&:5? -A14*GA4*- -A5 H'&GF4E 9

A5 :4*&:' 46 -A5 ?*D15E5K @2? D 2:5F 4$51 -A5 &M*'?'-'4& @'-A 2 ?D5:'2 $'5@ -4 -A5 '&-515?-? 46 -A5 :14@&M 2& 5&F(A4@5$51(@A':A '- $51C 'ED5165:-C 2&?@515F(2? 2DD521? 614E '-? 615M*5&- :4 '?'4& @'-A -A5 14C2 2&F ?5:* 21 ,*1'?F':-'4&? 6 A5 I :4*&:' 46 -A5 41F51?K A2F :A21G5(2? -A5 &2E5 'ED41-?(46 -A5 G152- E' '-21C 612-51&'-'5?(# A5 99 :4*&:' 46 12G4&K @2? '&-1*?-5F @'-A -A5 G5&512 2FE'&'?-12-'4& 46 -A2- H'&GF4E 2&F '-? F5D5&F5&:'5?('&: *F'&G 2D 5?M 2&F A2F(+5?'F5?(5J-5&?'$5,*1'?F':-'4& 2? 2:4*1- 46 2DD52 (g 2?- C(

I $"+$ #&$ / > * F(, 45 A & - / $ > / 2B(E. +'#' #0 ##' # > 2' &4' 22' 2F' FE< #) >2 A / $ $ $ #0'## # (? ? '&?$ & >'*# - /'$' # /$/' $ '# '2(5(N7$' 0 , >' $ * /'0>' ? ' #" ' 8 $ $/$' ' ' '#'-' 'E' I' #' ' ' '#'-' 4FF' ' á # Ú * + '$- /M +$- $ #' /# ' +'###'-'2(5

A '& # /' *'$''#& =&?$ & L '$'- #/ ' $ /' #J'+# # L ' G'* +' $&?' *' ? ' ? ' - '# & ' *' ?'& G ' 'G$' & /'0>' ?'D# "' '$'$-L - # + ' $ /'+$ ' *'" L ' + ' ? ' $#$'/ -$ L + 'G$'& ++# /' '$' -$L $ ' #0 $'&$ /' ?'& &#' *' $>'# '2@@B' $-+$ >' +'/' $ & $' +'#''' - /'J'##.' ?$' J- $# /'$' " ?' ?'* &# '$ /'$? L # >' *' ?#'# # #

=

-A5 I:4*&:' 46 -A5 "&F'5?K @2? '&?-'-*-5F +C
51F'&2&F(' '& < <<(' 641 -A5 :4&-14 46 -A5 E 5B
1':2& F5D21-E5&- -? D4@51?(' :4ED15A5&?'$5 2?
-A5C @515 '& '-? 41'G'&(' @515 ?4 E*:A 5& 21G5F
&F51 A21 5? -A5 '6-A' 2&F A'? ?::5??41?(' -A2- '-
+5:2E5 -A5 F5D4?'-41C 46 2 2@(' -A5 64*&-2'& 46
2 &4E'&2-'4&? +4-A' 5:: 5?'2?-':2 2&F -5ED412 (
2&F -A5 ?*D15E5 -1'+*&2 (' @A515 2 M*5?-'4&?('
@A5-A51 46 G4$51&E5&- 41 -12F5 '& -A5 :4 4&'5?('
@515 6'&2 C 2F,*F':2-5F 9

*:A @515 -A5 641E?' @A':A -A5 G4$51&E5&- 2?B
?*E5F *&F51 -A5 A2&F?' 46 51F'&2&F 2&F ?2+5 2
A5 G152- :4&:51&?' 46 -A5 5ED'15 @515 +14*GA-
*&F51 -A5 :4&-14 46 2 65@ F5D21-E5&-?(' @A':A
44H5F -4 -A5 :14@&' 2?' -A5'1 :4EE4& A52F A5
:A'56 ?-2-'4&?' @515 4::*D'5F +C 2@C51?(' @A4 @515
2 4&5 :4ED5-5&- -4 -A5 F*-'5?N 2&F -A5 D15:'&:-?'
46 -A5 :4*1- ?@21E5F @'-A 2 4C2 E''-'2(' @A4(' 2?

9 55 -A5 &2-*15 2&F +142F
5J-5&- 46 -A5?5 D4@51?(' '& 5B
:4D F5 5C5? F5 2? &F'5?(-4E(
'' '+ ''-'-;(5C5? <(; > ?4
4 41L2&4(4 -':2 &F'2&2(-4E
#0 : $&- J' G? " * ? 0$&D ?$? + / L
"' *' ?#' #0 $ / ?$:A # * + $- /' +$-
$ #' /# ' +'?#' --' 2@5'
2BE
? ?# /' ' + ⍰ *' ?'< '
+$ $ #' /# ' --' A F44'
& $# ' $ - ' / $G ' -' 0>'
& + +$ /' *' ?# #-' : '#' 2)FB'
0>' ' $ #$" ' " # ' # '
' ? ' "$ #K$ # ' $ /' $ ' *'
?' '$ # ' #0 $ ' &#'#' $ /

5::5?'2?-':2(*&F51 51F'&2&F
2&F ?2+5 2N -4C5-A51 @'-A 2&
2::4*&- 46 -A5 D2D51? :4&-2'&5F
'& -A5'1 21:A'$5?' -' '? 2& 2+5
E5E41'2(15D5-5 @'-A :*1'4*?
'&641E2-'4&' -' '? ?'&G* 21 -A2-
-A'? '&-515?-'&G 2&F 2*-A5&-':
F4:*E5&- ?A4*F A2$5 +55& ?4
'-- 5 :4&?* -5F(:4&?'F51'&G -A5
D4D* 21 :A212:-51 46 -A5 :4 5:B
-'4& '& @A':A' -' '? D15?51$5F
F4&4- 15:4 5:-5$51 -4 A2$5 E5-
@'-A 2 1565 15&:5 -4 '- '& 2&C 2*B
-A41 - @2? +C E515 2::'F5&-(
'& -A5 2+?5&:5 46 2 G5&512 '&B
F5J(-A2- ?-*E+5F 4& '- '&
-A5 ' '& @A':A '- '?
'&G* 65F

-A5C 4@5F -A5'1 5 5$2-'4& -4 '-? D2-14&2G5(@515 &4- 'H5 C -4 '&-51D15- -A5 2@ -4 -A5 F'?D212G5E5&- 46 D1514G2-'$5 9

A5 G152-51 D41-'4& 46 -A5 2@? 46 -A'? 15'G& 215 F'15:-5F('& ?4E5.'641E 41 4-A51(2? E'GA- +5 5JD5:-5F(-4 :4E E51:5 2&F F4E5?-':' '&F*?-1C'. A5'1 $51C 21G5 &*E+51(A4@5$51('ED '5? 2& 5JB -1241F'&21C 5JD2&?'4& 46 -A5 &2-'4&2 5&51GC 2&F 15?4*1:5?(2? @5 2? 2 E4?- 521&5?- F'?D4?'-'4& '& -A5 G4$51&E5&- -4 64?-51 -A5E A5 @'?F4E 46 -A5?5 5664 1-?(2- 2 -'E5?('? &4- 5M*2 C :51-2'& @' +1'56 C 5&*E512-5 2 65@ 46 -A5 E4?- :A212:-51B '?-':' 2&F 'ED41-2&- D14$'?'4&?

C 2 D12GE2-':' 46 < (2 D51?4&?(@A5-A51 &2-'$5? 41 6415'G&51?(@515 D14A'+'-5F 614E ?A'DD'&G G44F? '& 6415'G& +4--4E?(614E 2 D41- @A515 2 D2&'?A ?A'D :4* F +5 4+-2'&5F 9P& 4-A51 D14A'B +'-5F -A5 ?2 5 46 $5??5 ? -4 6415'G&51? U &4-A51 466515F(2 21G5 D15E'*E 4& 2 $5??5 ? 46 2 :51-2'& -4&&2G5 2&F *D@21F?N 2&F 4-A51? A5 F 4*- D14B -5:-'4& 2&F $21'4*? 'EE*&'-'5? -4 ?52E5&'< A5

1 ! # > $ = $"+$ #&$'/ > '* '24@' #& V $>' ? '- $ # " L A '- $"+$ #& * #+# $'#+- ' / K$'0W '" '# + ' / ' $! #= G$'# /'0>'6 >': ' $= &#$'#& $'- 0#&$' '+$ '/' '$ &&# ' / ' :#$" ' $/ '" '+ /#$ ' ' +'#'(B " $ / '#- , '#'* $/' P 8 $ $/$' " ' 22 ?' ' # / ' ' >$ 2@E2' $"+$ #&$'/ ' > ' - * # ' $' $' "$ '& = * '24) + /# ## ' & '' /$/''#/$ a *$ ' '+0 ' 2E ?' #$ $'# ##& $-&# '/'& += 2(5@' 0#/'* '24B 0 V 8 $ / ' 8 $ $/$'- ' ' $ +0 ' * ? '& L 2@' 1 & /' 0>' $'$ ' &&# ' ' 8 $ $/$' - +0 ' 4 / /' :#$" ' /'--'(4'((

= ;

F1'6-' 46' -A5' 6'1?-' 46' -A5?5' 2@?(' 'H5' -A2-' 46' -A5' 62E4*?' &G '?A' &2$'G2-'4&' 2:-(' ?4' E2&C'C521?' 2-51(' @2?(' 2?' -A5' D152E+ 5' ?5-?' 641-A(' -4' 5J: *F5' 6415'G&B 51?' 614E' -A5' :211C'&G' -12F5N' 2&F' -A5' 4-A51?' @515' 5M*2 C' F5?'G&5F' -4' +*' F' *D' 2' E2''&5(' 641' -A5' F5B 65&:5' 2?' @5 ' 2?' :4EE51:5' 46' -A5' :4*&-1C ' &' -A'?(' -A5' ?4$515'G&?' @515' 62$4*15F' +C' -A5'1' 'ED41-2&-' :4 4&'2 ' 2:M*'?'-'4&?(' -A5' F'?-2&:5' 46' @A':A(' E415B 4$51(' E2F5' '-' 5JD5F'5&-' -4' 5ED 4C' $5??5 ?' 46'G152-51' +*1-A5&' -A2&' -A4?5' A'-A51-4' *?5F ' A5' 2&G*2G5' 46' ?*+?5M*5&-' 2@?(' 2?' @5 ' 2?' $21'4*?' :'1:*E?-2&B :5?' @'-A'&' 4*1' H&4@ 5FG5(' 2--5?-' -A5' ?*::5??' 46' -A5?5' D14$'?'4&?' A5' &*E+51' 46' $5??5 ?' '&' -A5' E51:A2&-' ?51$':5' 46' D2'&(' 2-' -A5' +5G'&&'&G' 46' -A5' ?'J-55&-A' :5&-*1C(' 2E4*&-5F' -4' 2' -A4*?2&F(' 2::41F'&G' -4' 2ED4E2&5?9' 5' E2C' '&651' -A5' 6 4*1'?A'&G' :4&F'-'4&' 46' -A5'1' :4EE51:'2 ' E21'&5' 614E' -A5'1' E' '-21C(' 2?' ?A4@&' '&' -A5' 21E2E5&-?' ?5&-' 2-' F'66515&-' -'E5?' 2G2'&?-' -A5' *1H?(' 41' -A5' 21+21C' :41?2'1?(' 6 ' A5' :4&$4C' @A':A' 2::4EB D2&'5F' -A5' &62&-2')42&&2' -4' 2&F51?(' '&' <= (' :4&?'?-5F' 46' 4&5' A*&F15F' 2&F' -A'1-C' $5??5 ?(' G152-' 2&F' ?E2 (' A2$'&G' 2' 641:5' 46' E415' -A2&' -@5&-C' -A4*?2&F' E5&' 4&' +421FN' 2' 641E'F2+ 5' 5M*'DE5&-(' '&651'41' 4& C' -4' -A2-' 46' -A5' 621.62E5F' R' &$'&:'+ 5' 1E2F2 KP

' '-5F' +C' 4+51-?4&('?-4.' 21G5 2&F' ?E2 ' / &-5(21-' 1C'46' E51':2($4 ' '''' D' ' :A2D-51' $'N 21-' ' :A2D-51 .,,' A5'655-' 6'--5F' 4*-' 2G2'&?-' J7' 55 4-A51' 5JD5F'-'4&?(5&*.' -A5' *1H?('& <=S;(:4&?'?-5F' 46' E512-5F' +C' 2$2115-5' 45:.' ?5$5&-C' ?2' (2&F' -A2-' *&F51' :'4&' F5' '2G5?(-4E' '' D' ' 4&?2 $4('& < (46' ?'J-C(6' *12'F5' 4?' 2 2:'4?(

' ' ' ' =

' D12G E 2-' :' @2?' D2??5F0 '&' <= <(' 2-' -A5' D5-'-'4&' 46'-A5' '&A2+'-2&-?' 46'-A5' &41-A51&' D14$'&:5?(' 15M*'1B '&G' &G '?A' 2&F' 4-A51' 6415'G&' -12F51?' -4' -2H5' -A5'1' 15-*1&?' '&' -A5' 61*'-?' 41' E51:A2&F'?5' 46' -A5' :4*&-1C(' 2&F' &4-' '&' G4 F' 41' ?' $51' A'?' 2@' ?55E?' -4' A2$5' +55&' F5?'G&5F' 5??' -4' +5&56'-' -A5' E2&*62:-*151' -A2&' -4' D15?51$5' -A5' D15:'4*?' E5-2 ?' '&' -A5' :4*&-1C 9' -' @2?' -A5' ?2E5' '&' D*1D41-' @'-A' 4-A51' 2@?' D14A'+'-'&G' -A5' 5JD41-2-'4&' 46' -A5?5' E5-2 ?(' @A5-A51' '&' :4'&' 41' +* '4&' A5C' @515' &4-' &5@' '&' D2'&(' &41' '&F55F' D5:* '21' -4' A51 6' A5C' D14:55F5F' 4&' -A5' D1'&:'D 5' -A2-' G4 F' 2&F' ?' $51(' '&F5D5&F5&- C' 46' -A5'1' $2 *5' 2?' 2' :4E E51:'2' E5F'*E(' :4&?-'-*-5F(' '&' 2' D5:* '21

:2D' :''' @A4(' '&F55F(5?-'E2-5? -A5' :4ED5E5&-' 46' -A'?6 55-' 2-F@ EEE' E5&N' 2' 14*&F' &*E+51(@A':A' E*?-' :51-2'&C' '&:*F5 ?52E5&46'5$51C' F5?:1'D-'4&' A5' &$'&:'+5' 1E2F2':4&?'?-5F(2:B :41F'&G-4' *&A2E(' 46' 2+4*-' 24E' $5??5?(' 21G5' 2&F' ?E2(;' ?4 F'51?(' 2&F' S(' ?52B E5&' /' '?-41C' 46' D2'&' 2&F' 41-*G2($4' $' D' 7' A5' 5?-'E2-5'62 ?+5 4@-A2-' 46' E4?-' @1'-51?

9' &'5'152' F5' 2'$5G2 F5' 12B &2F2(' 5:5E+51' ;-A' /12G.' E2-'':2?' F5' 5C&4(' 64' < 7 '[/' ' 5? 2D51:'+2C?(K' 5&,4'&?-A5' 41F'&2&:5(' ==' M*5' 4?' E212*5F'? D41M*5' 4?'$5&F'515&' 4?A2&F5?2.' :21' F5&*5?-14?15C&4?' 5&' E51:2.' F*1'2?%C' &'' 5&' 414' &'' 5&D 2-2&'' 5&E4&5F22E4&5F2F2' F5 E2&512' M*5' &4' D*5F5&' D15-5&F51' CG&4.' 12&:'2%C' F5&' 6'2&' 2?' !2&2?' C' 2+4&2F2?' F5' 4' 6215 1' C' :*ED'1' 2??'%C' ?'' 62' 215F5?' M*5' ?2:2&' 5*2&' 414' 4' D2-2' 4' E4&5F2' :4&-12' 5' -5&41' C' 641E2' F5' 2?' F':A2?' 5C5?' C' F5?-2' &*5?-12' :21-2' E2&F2E4?' $4?' M*5' G5 4 -4 E5C?%C' ?52D51F'F4 :4E4' 2?' F':A2?' 5C5?' E2&F2&(' C' F5E2?' :2C2&' C' '&:*112&' 5&' 2?' D5&2?' 5&' 2?' 5C5?' F5' &*5?-14?' 15C&4?' :4&-5&'F2?' :4&-12' 4?' M*5' ?2:2&' 414' ' D2-2' 4' E4&5F2' 6*512' F5' :' 4?' ?'& &*5?-12' ':5&:'2' C' E2&:' F2F4%2?' M*2 5?5J5:*-5F' 5&' 5' :' 4?' C' 5&' ?*?' 6'2F415?K

C' 12GE2-':2?' F5' 5C&4(' 64' ;' < ='>' A5?5' 2@?' @515' 2?' 4 F' 2?' -A5' 64*1-55&-A' :5&-*1C' '&' 2?-' 5(' 2&F' A2F' +55&' 15&5@5F' +C' 5$51C' ?*::55F'&G' E4&21:A(614E' -A5' -'E5' 46')4A&' ' / 1.' F5&2&U2?' 52 5?(' '+' $'' -'-' ' 5C5?' < > ; ; 7' 'E' 21' 4&5?' @515' D2??5F' *&F51' -A5' :4&-5EB D4121C' D1'&:5?(' 5&1C' ' 2&F' ' 46' &G 2&F(')2E5?' ' 46' :4-2&F(']:

= <

?5&?5(' -A5' @52 -A' 46'2' :4*A-1C 9' A'?'51141(' :4E E4&(' 2?' ' A2$5' ?2'F(' -4' 4-A51' *14D52&' &2-'4&?(' @2?' 5E '.' G&5&- C' 62-2 ' -4' D2'&(' ?'&:5' -A5' D14F*:5' 46' '-?' &2-'$5' E'&5?' +56415' -A5' F'?:4$51C' 46' E51':2(9' 2&F' 46' -A4?5' '&' -A2-' M*21-51' 26-51@21F?(' 641E5F' '-?' G152-' ?-2D 5 ' ?' ?*:A(' -A5?5' E5-2 ?' ?A4* F' A2$5' 5&,4C5F' 5$51C' 62:' '-C' 641' -12&?D41-2-'4&' -4' 4-A51' :4*&-1'5?(' @A515' -A5'1' A'GA51' $2 *5' @4* F' 26641F' 2' :4115?D4&FB '&G' D146'-' -4' -A5' 5JD41-51

A5' ?*ED-*21C' 2@?' 46' 51F'&2&F' 2&F' ?2+5 2' 215' 4D5&(' 641' -A5' E4?-' D21-(' -4' -A5' ?2E5' 4+,5:-'4&?' @'-A' -A4?5',*?-' &4-':5F ' *:A' 2@?(' D14ED-5F' '&' 2' G152-' F5G155(' &4' F4*+-(' +C' -A5' F5: 2E2-'4&?' 46' -A5' : 51GC' 2G2'&?-' -A5' D4ED' 2&F' $2&'-'5?' 46' -A5' @41 F(' @515' 62E' '21(' '&' 521 C' -'E5?(' -4' E4?-' *14D52&' ?-2-5?' A515' @2?' 2ED 5' ?:4D5' 641' -A5E' '&' D2'&(' @A515' -A5' 5J2ED 5' 46' -A5'1' 4? 5E' &5'GA+4*1?' A2F' F4&5' E*:A' -4' '&65:-' 2 ' : 2??5?' @'-A' 2' 64&F&5??' 641' ?*ED-*4*?' 2DD215 (' 2&F' 2' ?A4@C' E2G&'6':5&:5' 46' '$'&G ' 51F'&2&F' 2&F' ?2+5 2' 65 ' &4-A'&G' ?A41-' 46' -A5' E4?-' L52 4*?' 46' -A5'1' D15F5:5??41?' '&' -A5'1' 56641-?' -4' 15?-12'&' -A'?' 'ED14$'F5&-' *J*1C ' A5C' F'F(' A4@5$51(' @A2-' 65@' D1'&:5?' 4&' -A5' 'H5' 4::2B ?'4&?' A2$5' F4&5(' > '5&641:5F' -A5' D15:5D-' +C' -A5'1' 4@&' 5J2ED 5' 4E5' 'F52' 46' -A5'1' A2+'-*2 ' 5:4&4B EC(' 41' 12-A51' 61*G2 '-C(' E2C' +5' 641E5F' 614E' 2' 15.

9' ...../' 2*:'? E2 52-41' @A':A' F14$5 A'E' 614E' -A5 :2. '?D2&55(K' D'-2 ' / '+' J''' 5D' $'' 7 55 ?2C? 21-'2 (&4-':'&G -A5' &4'?5 2?4 -A5' D15:'?5 ?-2-5E5&-' 46' E2F5 +C' -A5' G4 F.+52-51? A2E.' '&C(' :'-5F' 21-' ' :A2D-51' $''' E51'&G 4*-' -A5' D2&'?A' 415(2? '&C(' :'-5F' 21-' ' :A2D-51' $''' 4&5' 46' -A5' :A'56' 2&&4C2&:5? 46' -A'? '?-41C(

‘ " ‘ ‘ .‘ =

E 4&?-12&:5‘ D15?5&-5F‘ +C -A5‘ :4E E 4&?‘ -4‘ A21 5?‘ -A5‘ ‘6-A(‘ ?44&‘ 26-51‘ A‘?‘ 2::5??‘4&(‘ @A‘:A‘ 15D15B ?5&-?‘ A‘?‘ F2‘ C‘ A4*?5A4 F‘ 5JD‘5&?5?‘ 2?‘"2E4*&-‘&G‘ -4‘ 4&5‘ A*&F15F‘ 2&F‘ 6‘6-C‘ -A4*?2&F‘ E212$5F‘5?(‘ @A‘ 5‘ -A4?5‘ 46‘ -A5‘ 2-A4 ‘:‘ ?4$515‘G&?‘ @515‘ 1215 C‘ 6‘6-55&‘ -A4*?2&F((‘41‘ 4&5.-5&-A(46‘-A2-‘?*E 9

A5C‘ D2??5F‘ ?5$512‘ ?2 *-21C‘ 2@?‘ 641‘ 15?-12‘&‘&G‘ -A5‘ 2E+‘-‘4*?‘ 5JD5&F‘-*15‘ 2-‘ @5FF‘&G?‘ 2&F‘ 6*&512 ?(‘ 2?‘ *?*2 " E4?-‘ 2665:-5F‘ +C‘ -A4?5‘ @A4‘ :4* F‘ 52?-‘ 26641F‘ ‘- 6‘ &‘ <= =(‘ -A5C‘ ‘??*5F‘ 2‘ D12GE2-‘:(‘ D14B A‘+‘-‘&G‘ -A5‘ ‘ED41-2-‘4&‘ 41‘ E2&*62:-*15‘ 46‘ +14:2F5?(‘ 41‘ 46‘G4 F‘ 41‘ ?‘ $51‘ 5E+14‘F51C(‘ 2&F‘ 2 ?4‘ D 2-‘&G‘ @‘-A‘ -A5?5‘ E5-2 ?‘ A5‘ 2$4@5F‘ 4+,5:-‘ @2?‘ -4‘ :A5:H‘ -A5‘ G14@-A‘ 46‘ *J*1C‘ 2&F‘ -A5‘ @2?-5‘ 46‘ -A5‘ D15:‘4*?‘ E5-2 ?(‚N

A5?5‘ D14$‘?‘4&?‘ A2F‘ -A5‘ *?*2‘ 62-5‘ 46‘ 2@?‘ 46‘ -A‘?‘ H‘&F‘ A5C‘ G2$5‘ 2&‘ 21-‘6‘:‘2‘ 2&F‘ ?-‘ ‘ A‘GA51‘ $2 *5‘ -@‘ -A5‘ D14A‘+‘-5F‘ 21-‘: 5‘ 4E5‘5$2F5F‘ -A5E‘N

9‘ R‘ 41M*5A2:‘5&F4?5 2&?‘ 2‘ E4F4‘ :4?-*E+15 F5 4? F‘:A4? ?5&415? 5C5? D2?2F4?(:5?212& 4? ‘&E5&?4? G2?-4? C‘ E‘ D14.‘ $5:A4 M*5 5& 2 E5?2‘ :2?2 F5‘ ‘ ?5 A2:5&N D*5? 5‘ F2‘‘4 F5?-4 &4-41‘2E5&-5 D215?:5 D41B M*5 ?5 A2 2 5& 5‘ D2-4 152‘ C‘ 5& 4? D2-4? M*5 ?5 A2:5& 2 4? D1‘$2F4? F‘ :1‘2F4? F5 ?* :2?2 G2?-21?5 :2F2 *& F‘2 :‘5&-4 C‘ :‘&:*5&-2 E‘‘ E212$5F‘?‘ C‘ 4? :2-4‘:4? 5C5? ‘ 51&2&F4‘ 4&2 ?2+5(?5C5&F4 -2& 5J:5.‘ 5&-5? C‘ -2& D4F514?4?(5& ?* D2-4 C‘ 5& 5‘ D2-4 F5‘ D1&:‘D5 ‘)42& M*5 A2C2 G41‘2(5 F5 2? ?5*412?‘&62&-2? :4& G12&&*.‘ E514 C‘ E* -‘-*F‘F5F2E2?‘&4 ?5 G2?-21‘:2F2 *& F‘2(?5C5&F4 E*‘ 2+2?-2F4? :4E4 F5 -2 5? 5C5?(E2? F5 F4:5 2 M*‘&:5 E‘‘ E212B $5F‘?K 5-‘:‘4& F5 2)*&-2 F5 41F5?‘ 2?(:-4+51‘; -A(< ; (2D*F‘ 2&F4$2(‘?-(F5‘ ED‘ 21 4? ‘-4E‘‘‘D‘ ;

-‘ &‘ <= N15D52-5F‘‘& < <‘ 5:4D‘ F5 2? 5C5?(-4E‘ ‘‘‘ 64‘ > &‘ < ;‘ 12GE2-‘:2? F5‘ 5C& ‚‘64‘ <

*‘ -‘ 5G4$‘2(5D-5E+51‘;&FN 2?4 ‘& <= ‘ 2&F‘ <= S.‘ 12G‘ E2-‘:2? F5‘ 5C&4(64+‘ <; ‘ <; (<;

: ‘ ;‘

=

)-A51?' '&F5E&'6'5F' -A5E?5 $5?' 641' -A5' D1'$2-'4&' +C' ?4E5' 4-A51' 2&F' ?:21:5C' 5??' 5JD5&?'$5' $21'5-C' 46' *J*1CM' ?*:A(' 641' 5J2ED5(' @515' -A5' :4?- C' ?' H?' @A':A' :2E5' '&-4' E415' G5&512' *?5' 26-51' -A5' :4&B M*5?-' 46' 12&2F2' *-' A515' -A5' G4$51&E5&-(' 4&' 15E4&?-12&:5' 46' -A5' :41-5?(' 2G2'&' '&-51D4?5F' '-?' D14B A'+'-'4&(' 15?-1':-'&G' -A5' D1'$' 5G5' 46' @521'&G' -A5E' -4' :51-2'&' ?D5:'6'5F' : 2??5? 9' 4-A'&G(' 4+$'4*? C(' :4* F' +5' E415' 'ED4'-':' -A2&' -A5?5' $21'4*?' D14$'?'4&?' F'15:-5F' 2G2'&?-' E2&*62:-*15?' @A':A(' *&F51' D14D51' 5&:4*12G5E5&-(' 41' '&F55F' @'-A4*-' 2&C(' 614E' -A5' D5B :*'21' 2F$2&-2G5?' 26641F5F' +C' -A5' :4*&-1C(' E'GA-' A2$5' 641E5F' 2&' 'ED41-2&-' +12&:A' 46' '&F*?-1C(' @A5B -A51' 641' -A5' ?*DD C' 46' 6415'G&' E21H5-?(' 41' 641' A4E5' :4&?*ED-'4&

4-@'-A?-2&F'&G' -A5?5' 41F'&2&:5?(' @5' 6'&F' 4&5' '&' < (' 2-' -A5' D5-'-'4&' 46' -A5' ?' H.G14@51?' '&' 12&2F2(' 2G2'&?-' -A5' '&-14F*:-'4&' 46' ?' H' -A152F' 614E' -A5' H'&GF4E' 46' 2D 5?M6' -A*?' 5&:4*12G'&G' -A5' D14B F*:-'4&' 46' -A5' 12@' E2-51'2 (' @A' 5' -A5C' '&-51F':-5F' -A5' *?5?' -4' @A':A' '-':4* F' +5' 2DD '5F' *:A' 215' -A5' '&:4&?'?-5&:'5?' '&-4' @A':A' 2' G4$51&E5&-' '?' +5-12C5F' +C' 2&' 4$51.L52 4*?' 2&F' 'ED51-'&5&-' ?D'1'-' 46' 5G'? 2B -'4&' P

' -' 12&2F2(' '&' <= ' > ' A'? 4& D5-'-'4& 46':41-5?(' '&-A5 C521' D15:5F'&G' 5ED515(' '& A'? ?5&?'+5R '?-41'2F5 *J4(K A2? 5JA'+'-5F' -A5' ?51'5? 46' -A5 E2&'64F' ?*ED-*21C' 2@? '& 2?-'5" -' '? 2' A'?-41C' 46' -A5 'ED4-5&-' ?-1*GG'5' 46' 2*-A41'-C' 2G2'&?-' -A5' '&F*G5&:5' 46' -A5 '&&4:5&-' D14D5&?'-'5? ''6D2&-5F' '& 4*1' &2-*15(' 2&F' &2-*12 C' '&B :152?'&G @'-A' '&:152?'&G @52-A' 2&,' :'$' 'L2-'4&

-' & 2' &4E+12F2' C' G12& :'+F2F' F5' 12&2F2(' G4?-4' ;' 12GE2-':2? F5' 5C&4(' 64(' <

A5 :A'56 5JD41-? 46 -A5 :4*&-1C '& -A'? 15'G& @515(-A5 61*'-? 2&F &2-*12 D14F*:-? 46 -A5 ?4' (-A5 E '&512 ?(46 @A':A 2 G152- $21'5-C @2? F5D4?'-5F '& '-? +4?4E(2&F -A5 ?'ED 51 E2&*62:-*15?(2? ?*G21(F15??5F ?H'&?(4' (@'&5(?-55 (W A5 +155F 46 D2&'?A A41?5?(:5 5+12-5F '& 2&:'5&- -'E5?(A2F +55& G152- C 'ED14$5F +C -A5 :14??@'-A -A5 12B +'2& ' A2F(A4@5$51(46 2-5 C521?(62 5& '&-4 &5G 5:-(*&-' -A5 G4$5'&E5&-(+C 2 &*E+51 46 ,*F'B :'4*? 2@?(?*::55F5F '& 15?-41'&G '- -4 ?*DA 15D*-5(UA2- -A'?.&4+ 5 2&'E2 +5:2E5 2& 5J-5&?'$5 21-': 5 46 6415'G& -12F5 6 *- -A5 :A'56?-2D 5 46 -A5 :4*&B -1C @2? @44 (@A':A(?'&:5 -A5 '&-14F*:-'4& 46 &GB '?A ?A55D 2- -A5 :4?5 46 -A5 64*1-55&-A :5&-*1C(A2F 152:A5F 2 F5G155 46 6'&5&5?? 2&F +52*-C -A2- 5&2+ 5F '-(*&F51 -A5 D15?5&- 15'G&(-4 :4ED5-5 @'-A 2&C 4-A51 '& *14D5 %,N

9 12GE2-':2? F5 5C&4(D2??'E > ':':'4&21'4 54G126':. :4. '?- F5 ?D2&2(-4E ' D > 2DE:2&C(5E F5 21B :5 4&2(-4E ''' D21- ''' :2D '' - 12GE2-':2? F5 5C&4(64 <; (<;S > &-5($4 ''' D = (&4-5 c > A5 :41-5? 46 4 5F4('& < ; (:4ED 2'&5F(I M*5 A2+'2 -2&-4? :2+2 4? ?: D2&4 5U 5& 12&:'2 :4E4 5& 2?-' 2K / 5E F5 2 :2F F5 '?- -4E $' D ;S 7 A5 -12F5(A4@5$51(@2? :4&-12+2&F N -A5 2@? 2G2'&?- -A5 5JD41-2-'4& 46 A41?5? +5'&G 2? 2&:'5&- 2? -A5 -'E5 46 DA4&?4 Z / 55 2?4 1F5&2&U2? 52 5?(64 S (7 2@? :2'*'5$51 D5&&2&5&- C 2$2' 2G2'&?- &2-'4&2 D15,*B F':5? A4?5 '& 62$4*1 46 E'' 5? A2$5 +55& ?4 ?-14&G '& -A5 5B &'&?* 2(2&F ?*:A -A5 :4&?5B M*5&- F5:2C 46 -A5 6'&5 +155F 46 A41?5?(-A2- -A5 D2&'21F? A2$5 +55& :4ED5 5F -4 ?*DD C -A5 EB ?5 $5? @'-A -A5 2--51 614E 2+142F 4*1G4'&G 15:H4&? -A2- ; (@515 2&&*2 C 'ED41-5F '&-4 -A5 :4*&-1C 614E 12&:5 2- -A5 :4?5 46 -A5 2?- :5&-*1C(-4E ' :A2D '$ '?-(F5 *J4(-4E ' D < > I '5&5 E*:A2? 4*5,2?(K ?2C? 21'&254(R :*C2 2&2 5? -2& ?'&G* 21(M*5 &4 ?4 2E5&-5 ?5 2D14*5:A2& F5 2 5& ?D2&2(E2? -2E+'5& ?5 5*2 5& 2+*&' F2&:'2 2 4-12? D21-5?K / 4?2?

=S

4 @A2- 5J-5&- -A5 6'&51 E2&*62:-*15? @515 :21B 1'5F(41 E2F5 2& 21-': 5 46 5JD41-('? *&:51-2'& d A5 $2G*5&5?? 46 ?-2-'?-':2 '&641E2-'4& '& -A5?5 521 C -'E5? A2? G'$5& 1'?5 -4 E*:A :1*F5 ?D5:* 2B -'4& 2&F -4 5J-12$2G2&- 5?-'E2-5? 46 -A5'1 15?4*1:5?(@A':A A2$5 +55& E5- +C 2 :4115?D4&F'&G ?:5D-':'?E '& 2-51 2&F E415 ?:1*-'&'L'&G :1'-':? 2DE2&C(-A5 E4?- 2:*-5 46 -A5?5(A2? 2F$2&:5F -A5 4D'&'4&(-A2- -A5 :421?51 :4-A? 4& C @515 E2&*62:-*15F '& 2?-'5(2&F -A4?5 5J:*?'$5 C 641 A4E5 :4&?*EDB -'4& 9 A5 14C2 41F'&2&:5?(A4@5$51('ED C('& -A5 :A212:-51 2&F E'&*-5&5?? 46 -A5'1 15G*2-'4&?(2 $51C :4&?'F512+ 5 D146':'5&:C '& E2&C 46 -A5 E5B :A2&': 21-? IPK 'E' 21 -5?-'E4&C '? +41&5 +C '&-5 B 'G5&- 6415'G&51?($'?'-'&G 41 15?'F'&G '& -A5 :4*&-1C 2- -A5 +5G'&&'&G 46 -A5 ?'J-55&-A :5&-*1C(@A4 &4-': 5 -A5 6'&5 :4-A? 2&F E2&*62:-*15 46 21E? '& 5G4$'2(%f% -A5 ?'H? 2&F $5 $5-? 46 12&2F2 2&F 2 5&:'2(N -A5 @44 5& 2&F ?'H 62+1':? 46 4 5F4(@A':A G2$5 5ED 4CE5&- -4"-5& -A4*?2&F 21-'?2&?(x

5E412+5?(64 7 5 &4-':5? 5?D5:'2 C -A5 6'&5 @44 46 4B '&2('& @A4?5-511'-41C= (?A55D D2?-*'5F(64 <

g 5E F5 21:5 4&2(-4E(''' DD S(>R 1 '6 5$51 5JD41-5F(K A5 2FF?(R'-@2? 2- ?4E5 D51'4F 4&G D4?-51'41 -4 -A5 F'?:4$51C 46 E51':2K

- 12GE2-':2? F5 U&4(D2??'E > 2&C 46 -A5E @515 F5?'G&5F -4 :A5:H 'ED4?'-'4&?(-44 46-5& D12:-'?5F'& -A5 E2&*B 62:-*15 2&F ?2 5 46 G44F?(2&F -4 H55D -A5E *D -4 2 62'1 ?-2&F21F

) 21'&2?4(4?2? 5E412. +5?(64 << g +'F(64 < > 2$2G'514('2GG'4(64 ; > A5 5&5B -'2& E'&'?-51(A4@5$51(D14B &4*&:5? -A56-P '&651'41 -4 -A5 ?'H? 46A'? 4@&:4*&-1C R 14*5CF2(K ?2C? 21'. &254(R F5 -4F4? 466':'4?(C 21-5? E5:F&':2? M*5 5& 5 2 ?5 5J51. :'-2& E*:A4% C D1'&:'D2 E5&-5 5& 2&41(C 5J51:':'4 F5 2&2?(C ?5F2? 41 2? M*2 5? F4? :4?2? +'*5& 5& 5?-2 :'*F2F E2? F5 F'5L E' D51?4&2?(? F5 E2?

-A5 : *1'4*? C.@14*GA- D 2-5 46 2 2F4 'F(9 2&F -A5 6'&5 :*- 51C 2&F G 2??E2&*62:-*15? 46 21:5 4&2(1'$2 '&G -A4?5 46 5&':5 6

A5 15:*115&:5 46 ?52?4&? 46 ?:21:'-CU 2&F -A5 6 *:-*2-'4& 46 D1':5?(E'GA- ?*GG5?- 2 152?4&2+ 5 F'?-1*?- 46 -A5 5J:5 5&:5 46 -A5 A*?+2&F1C *&F51 -A'? 15'G&')A5 -*1+** 5&- :4&F'-'4& 46 -A5 :4*&B -1C E2C 2::4*&- 641 -A'? D15--C 62'1 C F*1'&G -A5 521 C D21- 46'- &F55F(2 &5G 5:- 46 2G1':* -*15(-4 -A5 5J-5&-''ED '5F +C -A5?5 :'1:*E?-2&:5?('? @A4 C '115:4&:'2+ 5 @'-A -A5 G5&512 -5&4U 46 51F'&2&F 2&F ?2+5 20? 5G'? 2-'4&(@A':A 5$'F5&- C 15 '5? 4& -A'? 2? -A5 E2'& ?D1'&G 46 &2-'4&2 D14?D51'-C -'? 5M*2 C 15D*G&2&-(E4154$51(-4 -A5 15D41-? 46 64d 15'G&51?(@A4 :4* F +5?- :4ED215 -A5 ?-2-5 46 -A5 :4*&-1C @'-A -A2- 46 4-A51? 2- -A5 ?2E5 D5J"'4F "/(A5C 5J-4 -A5 61*'-6* &5?? 46 2 ?4' @A':A C'5 F5F -A5 D14F*:-? 46 -A5 E4?- 4DD4?'-5 : 'E5?N -A5 A' ?

F5?-4 2 :'*F2F E*C 1':2(D41 4? G12&F5? -12-4? F5 E51:2F*: 1'2?K 4??2? 5E412+5?(64 [

9 +'F 64 < > 2$2G'514(2 E415 D21?'E4&'4*?5*4G'?-(15B E21H?(&5$51-A5 5??(" 4&4 '& 2 2F4 'F 2??2 21-56':* F 4G&' ?41-5(5 ?5 $ 2$412 +5&5??'E4 F5 -*--5 5 21-'(5 ?4D12 -*--4 F 1G5&-'(5 $?4& -2&-* 21G5&: -51 M*2&-* &4& ?4&4 '& F*5 2 -15 -5115K '2GG'4(64

-' 514&: 2*4(2 @1'-51 2- -A5 :4?5 46 -A5 6'6-55&-A :5&B -*1C(:'-5F +C 2DE2&C(5E F5 21:54&2(-4E ' D21- ''' D ;

6 A5 -@5&-'5-A *?-12:'4& 46 5&41 5E5&:'&0? '&$2 *2+5 :4ED' 2-'4& :4&-2'&? 2 -2+5 46 D1':5? 46G12'&('& F'6515&- D21-? 46 -A5 H'&GF4E(*&F51 51F'B &2&F 2&F ?2+5 2 2H5(641 5J2ED5(-A4?5 46 &F2 *?'2 & <=SS(2C521 46G'52- 2+*&B F2&:5(-A5 46 @A52- ?4F '& &F2*?'2 641 E2. 12$5F'5?N '& <=S ('- 14?5 -4 < N '& < (2 ?52?4& 46G152- ?:21:'-C(-4 (2&F 5$5& N '& < S('- @2? 2- N 2&F '& < ('- A2F62 5& -4 S E212. $5F'5? 5E F5 2 :2F(F5 '?- -4E $' DD <(;

: 4-A5F @'-A $'&5C21F?' 2&F D 2&-2-'4&?' 46'61*'-.-155?(' E*:A E415' 2+*&F2&-(' '-'@4* F ?55E(' '&' -A5'&41-A51&' 15G'4&?' -A2&' 2-' -A5' D15?5&-' F2C -A5' $2 5C?' 2&F' F5 ':'4*?' $5G2?(' G 4@'&G' @'-A' -A5' 1'D5' 5J*+512&:5' 46' ?4*-A51&' $5G5-2-'4&.' 5J-5&?'$5' F'?-1':-?(' &4@' ?E'-B -5&' @'-A' -A5' :*1?5' 46' +2115&&5??(' @A515' -A5' -12$5 51' ?:21:5' F'?:51&?' -A5' $5?-'G5' 46' 2' 142F' 41' 46' 2' A*E2& A2+'-2-'4&(' +*-' @A'FA' -A5&' -55E5F' @'-A' 2 ' -A2-' @2? 15M*'?'-5' -4' -A5' ?*?-5&2&:5' 46' -A5' D4D* 4*?' :'-'5?' '&' -A5'1' &5'GA+4*1A44F 9

A5' '&A2+'-,'&-' 46' E4F51&' D2'&' 41' -2 C(' @A4' @2&F51?' 2E'F' -A5' 1*'&?' 46'-A5'1' ?-2-5 C' :'-'5?(' -A5'1' G12??.G14@&' ?-155-?(' -A5'1' D2 2:5?' 2&F' -5ED 5?' :1*'&+.

4ED215'(641 5J2ED 5(' -A5 2::4*&-? 46' -A5' 5&$'14&?' 46' 4B 5F4 2&F' 2F1'F(' -A5' -@4' E4?-' :4&?'F512+5' :'-'5?' '&' 2?-'5(' +C' 2&:'5&-' 2&F' E4F5E' -12B $5 51?' &5' 46' -A5' E4?-' '&B -5 'G5&-' 2&F' 15:5&-' 46' -A5' 2--51(' '&' A'?' ,4*1&5C' +5-@55&' -A5?5 -@4' :2D'-2?(' 15E21H?(' R' A515' '? ?4E5-'E5?' 2' $'?'+5' -12:H(' 2&F' ?4E5-'E5?' &4&5' E4?-' :4EB E4&C' @5' D2??5F' 4$51' @'F5 ?2&F?' A5' :4*&-1C' +5-@55& 2F1'F' 2&F' 4 5F4(' ' &55F' ?:21:5C' ?2C(' '?' ' ' D54D 5F' 2&F' ' ' :*-'$2-5F' 641' '-' '?' 2' 2' D21-' 46' -A5' ?2E5' 21'F' D2'&' -A2-' ?-15-:A5?' 4&' 5$51C' ?'F5' 214*&F' -A5' :2D'-2(' 2&F' @A':A' '?+4*&FB 5F' 4&' -A'?' ?'F5' +C' -A5' 2G*?(' A5' @A4 5' 46' -A5' $12,' -4' 4B 5F4(' < D2??5F' -A14*GA' 4&C' 64*1 7 / $0*''# $" ' /' $G' ' ((' ' (' F " $' * ? '?# /'# ' / #=' '$ Td/' & ' /' G # ?'* K ' $ / 214E2-':' D 2&-?' +*-' A515' 2&F' -A515' ?4E5' :4E' 2&F' '?-4' +5 ?55&K' / &G '?(' D2'&' '& <S (' $4 ' '' D' 7 A2-' 2' :4&B -12?-' F45?' 2 ' -A'?' D15?5&-' -4' -A5' 2&G*2G5' b6-A5' -2 '2(&?(' 2$2.' G'514' 2&F' 21'&254(' '&' @A4?5 -'E5' -A5' :4*&-1C' 214*&F' 4 5F4 ' ?*1D2??5F' 2 ' 4-A51' F'?-1':-?' 46' D2'&' '&' -A5' 5J:5' 5&:5' 2&F' 61*'-6* &5?? 46'-A5' ?4' NK' @A':A(' R' ?H'6* C' '11'G2-5F' +C' -A5' @2B -51?' 46' -A5' 2G*?(' 2&F' E'&*-5C' :*-'$2-5F(' 6*1&'?A5F' 5$51C' $2B 1'5-C' 46' 61*'-' 2&F' $5G5-2+5' D14'9 F*:5' -4' -A5' &5'GA+4E'&G' :'-CK' A' 5(' '&?-52F' 46' -A5' ?*&+'*&-' D2'&?' 214*&F' 2F1'F(' '-' '?' F5B ?:1'+5F' 2?' ?'-*2-5F' ' '&' -A5' +4?4E' 46'2' 62'1' :4*&-1C(' @'-A'2& 2ED5' -511'-4'C(' C'5F'&G' 1':A' A21$5?-?' 46':4E' 2&F' G # ' 2&F' 2 ' #D ' D ' 2HE5''-?' 46' !62K' ' Q > (& Q& & A * ! ') ' 3

46 F5:2C 2&F F5D4D* 2-'4& A2F -A5& 2 152FC +5G*& 9 -:2& 4& C +5 64*&F '& -A5 6'1?- A2 6 46 -A2-:5&-*1C('& -A5 15'G& 46 51F'&2&F 2&F ?2+5 2(2&F -A2- 46 -A5'1 ?*::5??41 A21 5? -A5 '6-A M '& @A':A 2?- -A5 ?-2-5(*&F51 -A5 ?-14&G 'ED* ?5 '- A2F 15:5'$5F(@2? 521&5F 4&@21F '& -A5 :21551 46 D14?D51'-C('& ?D'-5 46 -A5 'G&412&:5 2&F E'?E2&2G5E5&- 46 -A4?5 @A4 G*'F5F '-

A515 '? &4 :4*&-1C @A':A A2? +55& G*' -C 46 ?*:A @' F 5JD51'E5&-?(41 A2? ?A4@5F(4& -A5 @A4 5(?*:A D1464*&F 'G&412&:5 46 -A5 -1*5 D1'&:'D 5? 46 5:4&4B E':2 ?:'5&:5(2? D2'& *&F51 -A5 ?:5D-15 46 -A5 62E' C 46 *?-1'2 M 2&F(2? '- '? &4- 2 @2C? 52?C -4 F'?:1'E'&2-5 +5-@55& -A5'1 2:-? 2&F -A4?5 46 51F'B &2&F 2&F ?2+5 2(*&F51 @A4E -A5 G51E? 46 E*:A 46 -A5 ?*+?5M*5&- 5G'? 2-'4& E2C +5 ?2'F -4 A2$5 +55& D 2&-5F(-A'? :'1:*E?-2&:5 A2? +14*GA- *&F5B ?51$5F F'?:15F'- 4& -A5 G4$51&E5&-(46 -A5 2--51M *&F5?51$5F(+5:2*?5 2@?(E'?:A'5$4*? '& -A5'1 5$5&B -*2 4D512-'4&(@515 &4- 2 @2C? ?4 2- -A5 -'E5 641 @A':A -A5C @515 41'G'&2 C F5$'?5FM &4- -4 2FF(-A2- @A2- @2? '&-1'&?':2 C +2F A2? +55& 2GG12$-5F -5&64 F *&F51 -A5 + '&F 5G'? 2-'4& 46 -A5'1 ?*::5?B ?41? P -'? 2 ?4 -1*5(-A2- E2&C 46 -A5 E4?- 5J.

I ? , #' &$ $ L # 23 *? ? U '$ & =
" $" *& / ?##- -# $&# V & $ - ?#0#=
- $. 7# ?' ' > $ GL / $? $G "# /# " $ /
$ & # # * $ $ $ +# " / L - $ # " #0 ' # F($-L
& # # ? - - #> *? -$ $ /' J > #0 '## # 2F G +$ *$&
? ?$ > $/ * 2(A 2)
$ '#/ & *? ? #0 '# $?$- " -

:5D-'4&2+ 5 2@?' ?2&:-'4&5F-7C -A5'1 &2E5?' 215 -4 +5 :A21G5F 4& -A5'1 D15F5:5??41?(@A4 A2F 5&G126-5F -A5'1 D1'&:'D 5?' '&-4 -A5 ?C?-5E 4&G +5641595 2&F E2&C 4-A51?' 215 -4 +5 $'&F':2-5F +C -A5 G5&512 D12:-':5 46 4-A51 &2-'4&?(@A':A 2*-A41'L5F 15-2 'B 2-'4& 4& -A5 ?:415' 46 ?5 6.F565&:5 U

4-A'&G '?' 52?'51 -A2& -4 D212F5 2+?-12:-' -A54B 15E?> -1*5 '& -A5 2+?-12:-> '& D4 '-':2 5:4&4E C& 4-A'&G A21F51 -A2& -4 15F*:5 -A5E -4 D12:-':5 A2-' 2& '&F'$'F*2 @' *&F51?-2&F A'?' 4@& '&-515?-?' +5--51 -A2& -A5 G4$51&E5&-' :2&(41(@A2-' '?' -A5

*' ?' / " $&>' *' ?' 0 L , "# $# ' &$ ' 0 '0"#' !' ?$ '0>' & $ # '"#' G# ?' ?$' *' /# $ /'$ /' $0 $'#' G' #+- $ ' $G ' 2' ?' ' L #" '#' <= ;(, # /'* #" ' $/ ' ' $D' ?#' '#' ?' - / & ' $ /' +$ *$& ' *' ?' & >' >' $' $G' *' ?$ ' :' #' < ;(?' J- L $# ' *' # ' / + #&' +$ *$& ' G$' - ?#0# /' $ /' ?' * #" ' $/ ' #' JL &?$ " ' * ‖/ + #&' G ' G$' , # /' 0 #+- ' # ' ?' & >' $' & $# ' $+ ' *' # ' $ /' G ' *$0 #& ' FR >' $' /# $ & ' #' < (/# $ /' $ /' $0 $' - ?#L 0# /' ?' #+- $ # ' *' # D' ? $/' * +' $- ' ' & L $" ' #' - / & # ' $' ? + ' ?# ' $- - $ ' * +' ?' ' *' 0 , ' $G ' ' ?$' ' - L * & >' && / /' ' < ;(? G ' ' $' $G' G$' -$ /' # /#& # '" ?' J- ' *'+$ L *$& /' # D Z$ /' $/+# # '" ?' #+- $ # ' *' ?' $G' +$ #$

>' ?# ' $"$& ' - '# # '0 ?' ?' & ' *' # D' $ /' ?' + $L *$& 'G ' - /#>' & ? /' # ' $ #

9' 55 5J2ED5?' 46 -A5?5 '& -A5 15'G&?' 46 5&1C ' 2&F)4A& ' / 5:4D' F5 2?' 5C5?(-4E' '' 64' <S (<S< 7 *:A 2?4 @515 -A5 &*E514*?' -21'66? 6'J'&G -A5 D1':5?' 46 G12'&(-A5 $5J2-'4*?' :2?? 46 ?*ED-*21C 2@?(-A4?5 641 -A5 15G* 2-'4& 46 -A5 $21'4*?' :126-?(2&F(2+4$55 2 (4& -A5 5JD41-2-'4& 46 -A5 D15:'4*?' E5-2?

-' A5 &G'?A -2-*-5 44H 24&5 @' 6*1&'?A (2+'EF2&-' D1446 46 -A'?('& -A5 5J: *?'$5 15G* 2-'4&?' 46 -12F5 2&F &2$'B G2-'4& 5J'?-'&G 2-' -U'5 :4?5 46 -A5 6'6-55&-A :5&-J11C' 1' A2B 14& *1&51 A2?' 5&*E512-5F E2&C(*&F51 5&1C (46 ?'E' 21 'ED41-' @'-A(2&F('&F55F(E415 D21-'2' '& -A5'1 +D512-'4& -A2&(-A4?5 46 51F'&2&F 2&F ?2+5 2' '?-41C 46 &G 2&F($4 '$' DD' < ' 5-'?5M

=

?2E5 -A'&G(-A2- -12F5('6 5- 2 4&5(@' 6'&F '-? @2C '&-4 -A5 :A2&&5 ? 4& -A5 @A4 5 E4?- 2F$2&-2G54*? -4 -A5 :4EE*&'-C(65@ @' F5&C *- @A2- '? -1*5 46 2 -4G5-A51 '? &4- -1*5 46 2&C 4&5 ?'&G C 2&F &4 4&5 &2-'4& :2& ?265 C 2:- 4& -A5?5 D1'&:'D 5? '6 4-A51? F4 &4- & D4'&- 46 62:-(&4 &2-'4& A2? 2:-5F 4& -A5E ?'&:5 -A5 641E2-'4& 46 -A5 D15?5&- D4 '-':2 :4EE*&'-'5? 46 *14D5 -A2- 2 &5@ ?-2-5(41 2 &5@ G4$51&E5&- '& 2& 4 F 4&5(:2& &4@ D14D4?5 -4 '-?5 6 '?(&4- -4 ?2:1'6':5 '-? '&-515?-? -4 2 ?D5:* 2-'$5 2+?-12:-'4&(+*- -4 2::4EE4F2-5 '-? '&?-'-*-'4&? -4 -A5 G152- D4 '-':2 ?C?-5E 46 @A':A '- '? 2 E5E+51 & -A5?5 D1'&:'D 5?(2&F 4& -A5 A'GA51 4+ 'G2-'4& 46 D14$'F'&G -A5 E52&? 46 &2-'4&2 '&F5D5&F5&:5 '& '-? E4?- 5J-5&F5F ?5&?5(E*:A -A2- @2? +2F '& -A5 5:4 &4E':2 D4 ':C 46 D2'&(2- -A5 D51'4F *&F51 15$'5@(E2C +5 $'&F':2-5F

- @4* F +5 *&62'1 -4 F'15:- 4*1 $'5@ -4 -A5 15 ?-1':-'$5 E52?*15? 46 51F'&2&F 2&F ?2+5 2(@'-A 4*- &4-':'&G 2 ?4 -A5 '+512 -5&41 46 -A5'1 5G'? 2-'4& '& 15G21F -4 2 G152- $21'5-C 46 4+,5:-? *:A(641 5J2ED 5(215 -A5 2@? 5&:4*12G'&G 6415'G&51? -4 ?5-- 5 '& -A5 :4*&-1C 9 -A4?5 641 62:' '-2-'&G :4E E*&':2-'4& +C '&-51&2 'ED14$5E5&-?(142F?(+1'FG5?(:2&2 ?(4& 2 ?:2 5 46 *&D15:5F5&-5F E2G&'-*F5 6 641 2 ?'E' 21 2--5&-'4& -4 -AU @2&-? 46 &2$'G2-'4&(+C :4&?-1*:-'&G E4 5?(M*2C?('GA-A4*?5? 2 4&G -A5

/ $ $ $ #0 '# $-- $ '0 " / + # (>B / $ &$/ / 6# + '# &?#' / # +$ &$ < # J# G?#&? + * ? /# $ &

:42?-(2&F F55D5&'&G 2&F 65J-5&F'&G -A5 A21+4*1?(R -4 2: :4E E4F2-5(K 2? -A5 2:-? ?5- 641-A(-A5 G152- '&:152?5 46 -12F5641 5E+5 '?A'&G 2&F 2FF'&G '& $U21'4*? @2C? -4 -A5 2::4E E4F2-'4&? 4e -A5 :'-'5?, 9 641 15 '5$'&G -A5 ?*+,5:- 614E 4&514*? -4 ? 2&F 4DB D15??'$5 E4&4D4 '5?N R9 641 5?-2+ '?A'&G 2 *&'641E :*115&:C 2&F ?-2&F21F 46 @5'GA-? 2&F E52?*15? -A14*GA4*- -A5 H'&GF4E(%\N 4+,5:-? 46 *&@521'5F ?4 'B :'-*F5 -A$4*G ' -A'? @A4 5 15'G&' N 641 E2'&-2'&'&G 2 D4 ':5(@A':A(614E -A5 E4?- F'?41F51 C 2&F F2&B G514*?(12'?5F D2'&('& "-A5 2&G*2G5 46 21-C1(-4 +5 -A5 ?265?- :4*&-1C '& A1'?-5&F4E N g 641 ?*:A 5M*2 ,*?-':5 2? ?5:*15F -4 5$51C E2& -A5 61*'-? 46 A'? 4@& '&F*?-1C('&F*:'&G A'E -4 5E+21H A'? :2D'B -2 '& *?56* 5&-51D1'5? N 2&F(6'&2 C(641 5&641:'&G U6'F5 '-C -4 :4&-12:-?(,, 46 @A':A -A5 ?4$515'G&? G2$5

I U 0 & &#0/$= / '# $ &$ $ " $ / @ 0# * &?$, *$"$ $' $+# / $ 5$ $! #0 '## # # > . + &# "?$ - &#*# /? $ $ $ /" $ '$ # >* * ? #+- ' + $ & & /* +? $ &?#' * # /#** &# # * ? D# "L / + + / $ &$/ / 6# + '# $&# J# $"+$ #&$ / > * 54A 22F A & - / $ > #0 ' # F2 FF B4 52 54 A & - / $ > #0 ' # 22 >2F A + "? $& * # # " + - # +$>0 + # / G?#&? - ?#0# / ? 0#L # >$ / " $ $ /? / * +' - ' # "? # $ - L # " # $ /? * L

$# + G# ? ? # - &#$ #& $"+$ #&$ / >L 2(5F * 5B . ? $+ $0 ? G ' # #& /0> $/ / > # ? U : >= $" /- $" V $ # J# # " ? "$ - ! /#& *' $' L # ? * ' ?& > - + # *' ?# #-' : $ /' ?$ ' ' '## &?$-' J# P $"+$ #&$ / > * 54A 22F A & - / $ > #0 ' ' # F2 FF a U $, $+ - $ "# # +' * # !$& $ - # R - -# -# JJJ# ' '$ # $G /# " & ?# '$ /- ' '* $ / # $/ / $ &$ $ #0 ### # 3 >@ A $"+$=

?*:A 2 G 41'4*? 5J2ED 5 '& 6A5'1 4@& 2FE '&'?-12-'4&(2? 5665:-*2 C 15?-415F -A2- D*+ ':15F'- @A':A '? -A5 -1*5 +2?'? 46 D*+ ':D14?D51'-C

A' 5 -A5?5 'ED41-2&- 15641E? @515 G4'&G 4& '& -A5 '&-51'41 46 -A5 E4&21:AC(' - 5JD51'5&:5F 2 G152-51 :A2&G5 '& '-? 5J-51&2 :4&F'-'4& +C -A5 'EE5&?5 2*GE5&-2-'4& 46 '-? -511'-41C A5 E4?- 'ED41-2&- 46 '-? 6415'G& 2:M*'?'-'4&? @515 -A4?5 &5215?- A4E5(12&2F2 2&F 2$2115 2- 52?-(-A5C @515 -A5 4&5? E4?- :2D2+ 5(" 614E -A5'1 D4?'-'4&(46 +5'&G +14*GA- *&F51 :4&-14 (2&F -A414*GA C 2&F D51E2&5&- C 'F5&B -'6'5F ^$'-A -A5 D2&'?A E4&21:AC 12&2F2(2? @5 A2$5 ?55&(@2? D 2:5F *&F51 -A5 ?:5D-15 46 2?B -' 5(G4$51&5F +C -A5 ?2E5 2@?(2&F 15D15?5&-5F '& '-? :41-5?(+5'&G('& -A5 ?-1':-5?- ?5&?5(D21- 2&F D21:5 46 -A5 H'&GF4E 2$2115 @2? 2 ?4 *&'-5F -4 -A5 ?2E5 :14@& +*- '-? :4&?-'-*-'4&(@A':A +415 :4&?'F512+ 5 2&2 4GC -4 -A2- 46 12G4&(15E2'&5F ?*+?-2&-'2 C -A5 ?2E5 2? +5 6415 A5 G4$51&E5&-('&F55F(@2? 2FE'&'?-515F +C 2 $':514C +*- 51F'B &2&F E2F5 2? 65@ :A2&G5? 2? D4??'+ 5(D51E'--'&G '- -4 15-2'& '-? 4@& 5G'? 2-*15('-? 2&:'5&- :4*1-? 46 2@(2&F '-? 2@?- A5E?5 $5? +4 -A5 641E?('6 &4- -A5 ?D'1'- 46 '&F5D5&F5&:5(:4&-'&*5F -4 ?*1$'$5 '-? *&'4& @'-A -A5 $':-41'4*? ?-2-5 9

A5 4-A51 D4??5??'4&? 46 D2'& @515 ?:2--515F

#&$ / > * (@ BB ! $& #&$ > # R --F@E B) $#O# A F@3.$ /# ?U #&&# $? ?* ? "?$ **# #8 " $*#& =6# / -$ $V &# > + $" $&& *? + ##--2(EA 2(4. ? $'$ & # # =#? 0 ?# #&$$ /& +#&$/ $# * /# $-* $ >& &# # ? $ $ + & -#

4$51 -A5 $21'4*? M*21-51? 346 *14D5(61':2(2&F E51':2 2D 5? @2? -A5 :4&M*5?-' 46 12G4&N 41(2-5 52?-(E2F5 4& +5A2 6 46 -A2-5 :14@& A5 M*55& 2DD521? -4 A2$5 -2H5& &4 D21-5 '& -A5 :4&F*:-5 46 -A2-5 @21(@A5-A51 F'?-1*?-'&G '-? 5M*'-C(41 '-? 5JB D5F'5&:C('& -A5 +5 '56 -A2-5 2 F'?-2&-5 D4??5??'4& '& -A5 A521-5 46 *14D5 @4* F D14+2+ C :4?-5 E415 -4 E2'&-2'& -A2& '-5 @2? @41-A & 62:-(D2'& '? -A5 4& C &2-'4&('& E4F51& -'E5?(@A':A A2? +55& 2+ 5 -4 H55D '-? A4 F 4& ?*:A D4??5??'4&? 641 2&C $51C :4&B ?'F512+ 5 D51'4FN 2 :'1:*E?-2&:5 'E D C'&G E415 @'?B F4E '& A51 D4 ':C -A2& '? :4E E4& C :4&:5F5F -4 A51 A5 62-5 46 -A5 2:M*'?-'4&? 2 *F5F -4 641E? &4 5J:5D-'4& -4 -A5 15E21HN 2&F 2D 5?('H5 ':' C(:4&-'&*5F D51E2&5&- C '&G126-5F 4& -A5 H'&GF4E 46 12G4&

6*&F2E5&-2 :A2&G5 '& -A5 '&?-'-*-'4&? 46 2B D 5? +5:2E5 15M*'?'-5 -4 2::4E E4F2-5 -A5E -4 '-? &5@ 15 2-'4&? -? G152- 466':5? 46?-2-5 2&F '-? 5G2 -1'+*&2 ? @515 1541G2&'L5FN '-?,*1'?D1*F5&:5(@A':A(*&F51 -A5 &G5$'& 12:5(2&F 5$5& -A5 6'1?- 12G4B &5?5(A2F +55& 2F2D-5F -4 15&:A *?2G5?(@2? &4@ E4F5 5F 4& -A5 D2&'?A A5 $21'4*? '&&4$2-'4&?)UU @515 :4&F*:-5F +C -A5 2-A4 ':' H'&G @'-A A'? *?*2 D1*F5&:5N 2&F -A5 1561E '& -A5 5G'? 2-'4& '? :4EB E5&F5F +C 2 521&5F 2&F 'ED21-'2 -2 '2&:'$' '2&(2? +152-A'&G 2 ?D'1'- 46 E4F512-'4& 2&F @'?F4E 9

1 U ; * V $> " # -$" # -# /(" # $ $ 8#$ U - #+ "T<? $K# $'' / # -#/ $ # &# /# / " # -$" # "# #-## $ # / (+$ #R #$ - ''#/ $'# $ $ /# $- # #O JJJ &$- ' ' 0# # / , $ #* # ' $+

S ' g

5' :4&:5F5F' E2&C' D1'$' 5G5?' -4' -A5' D54D 5(' 2&F' -4' -A5' :2D'-2 ' 5?D5:'2 C(' @A4?5' $5&512+ 5' *&'$51?'-C' A5' 15?*?:'-2-5F' 614E' -A5' F5:2C5F' ?-2-5' '&-4' @A':A' '-' A2F' 62 5&(' E2H'&G' '+512 ' 2DD14D1'2-'4&?' 614E' -A5' -152?*1C' 641' '-?' 5&F4@E5&-' A5' ?*DD41-' 46'2' E51B :5&21C' 21EC(' 2&F' -A5' +*1F5&?' '&:'F5&-' -4' -A5' @21(' D15??5F' A52$' C' 4&' -A5' D54D 5' F*1'&G' -A5' 6'1?-' C521?' 46'A'?' 15'G&'N +*-' -A5' 52D4 '-2&?(' @A4(' 2?' 2 152FC' &4-':5F(' A2F' +55&' -12&?65115F' -44' 46-5&' 614E' 4&5' $':-41' -4' 2&4-A51' -4' +5' H55& C' ?5&?'+ 5' -4' -A5' 4??' 46' D4 '-':2 ' '&F5D5&F5&:5(U' @515' G12F*2 C' 15:4&:' 5F' -4' A'?' 2FE'&'?-12-'4&(' 2&F' -5?-'6'5F' -A5'1' ?5&?5' 46' '-?' +5&56':5&-' :A212:-51' +C' :5 5+12-'&G' -A5' 2&&'$51?21C' 46'A'?' F52-A(' 641' E415' -A2&' -@4' :5&-*1'5?(' @'-A' D*+.') ':' ?4 5E&'-'5?(' 2?' 2' F2C' 46' E4*1&'&G' -A14*GA4*-' "-A5' H'&GF4E 9

-' 621' -A5' E4?-' 'ED41-2&-' 46' -A5' F'?-2&-' 2:M'B ?'-'4&?' 46' D2'&' @515' -A4?5' ?5:*15F' -4' A51' +C' -A5' G5&'*?' 46' 4 *E+*?' 2&F' -A5' 5& 'GA-5&5F' D2-14&2G5

1' 8#$ ' #$' /# $L ?# #$ ' / &$# "' ?$' 0M#' - #' #0' JJ#J' &$-' #'<' #0' /#/' '& +- 'G# ?' ?'? ' HHH' &$-'#' ##' ' ' #" #' $ /' /#" #>' *' ?'" ' + ' $' ' #&# # ' +'#'' -' ' -+#'$'# /#'#/ $' ' $ L 3(A ' >' 'D G' ?'- L " #?' #' # /#" &' G? ' -$L & # ' ?' J# ' $ /' "' '?$/'0 ' ?'" $ '+$' #+- # + ' G?#&?' 8#$ ' ?'+ ' *' ' ?' $ '$ /' ** /' *' ?' * / +' G# ?=' ?'+ ' ! >'- & /' G?#&?'?' $ /' ?'& ">'#' ?$' ?' $" ' ?$/' - / & /V' ?#' -?# -?#&$' ?# >' ?' ' #+ '"#'# "' $//#L '& / &' *' ?$ ' *' # $' " $&' ' ?' $&' G?#&?' 0 ' '?#'?#'#' ' ' ?'>'$&& +-$#/' ' ?'/ L G ' D =G ' ' $* ' ?#' & ' &# /' 0>' +#$#' & # $&& # ' ' ?' ? ' *' $L / $' $ $' $#$ $' L - ' ?$'-#&' /' $' #0 L &#$' 23E(A 2324 .' +'#J' $ ' $' - # ' ' ?' ' *' ? H:

46 ?2+5 2 E2G'&2-'4& A2F 2ED 5 12&G5 '& -A5 +4*&F 5?? D51?D5:-'$5 46 -A5?5 *&H&4@& 15G'4&?N +*- -A5 15?* -? 2:-*2!C 152 'L5F 614E -A5 F'?:4$5B 1'5?(F*1'&G -A5 M*55&0? '65(@515 :4ED212-'$5 C '&B ?'G&'6':2&- & 2 E515 6'&2&:'2 $'5@(-A5C A2F +55& 2 :4&?'F512+ 5 :A21G5 4& -A5 :14@& A'? @2?('&F55F(D21- C 4@'&G -4 -A5 A*E2&'-C 46 ?2B +5 2(@A4 '&-516515F(2? @5 A2$5 ?55&(-4 D15$5&- -A5 :4ED* ?41C 5J2:-'4& 46 &F'2& 2+4*1 A'? @2? ?*+?5M*5&- C(2&F 'E E5F'2-5 C 26-51 A51 F52-A('&B F55F(:211'5F -4 ?*:A 2& 5J-5&-(-A2- &521 C A2 6 2 E' '4& 46 4*&:5? 46 G4 F @515 C521 C F12@& 614E -A5 E'&5? 46 '?D2&'4 2 2 4&5 9 A5 D521 6'?A. 51'5?,6 2&F -A5 :*-*15 46 -A5 ?*G21.:2&5('&-14B F*:5F 614E -A5 2&21'5?(U C'5 F5F 21G5 15-*1&? *&F51 -A5 ?2E5 '&A*E2& ?C?-5E

51F'&2&F(@A4 5&,4C5F(+C -A5 M*55&0? -5?-2B E5&-(A2 6 -A5 2E4*&- 46 -A5 &F'2& 15$5&*5?(@2? &4@ 6* C 2@2H5&5F -4 -A5'1 'ED41-2&:5 -@4* F +5 *&,*?-(A4@5$51(-4 ?*DD4?5 A'? $'5@? 'E'-5F -4 'EE5F'2-5 D5:*&'21C D146'-?N 641 -A5 E52?*15? A5 D*1?*5F @515('& E2&C 15?D5:-?(@5 :4&-1'$5F -4 D14E4-5 -A5 &4+ 51 5&F? 46 F'?:4$51C 2&F :4 4&'L2B -'4& 5 '&$'-5F -A5 D51?4&? E4?- 5E'&5&- 641 U2*-':2 ?:'5&:5 2&F 5&-51D1'?5(2? '&L4&(4 '?(

I 6 $ /#$ &&#/ = " $G G ?) @EEE / &$ $ / &#0 '#'&$-'J'### A $ > $ 6 $ /#$ &&#L && /# " $ > ? G / $ / &#0 '##'&$-'#J +# * 6# -$ # $ >#/ / P '#/ 6# #$ $ $ 4EE EEE 0 * " / $ $ > / $ /#$ #0 #' &$-' '###' 0 & $ #&# / &#' #0'J' A 8 + K 0 8 # ? - $ '*# ? # * 0$= * 2B@

5?D*::'(-4 A'? :4*1-(9 @A515 -A5C :4&?-'-*-5F 2 ?41- 46 +421F 46 &2$'G2-'4&(:4&?-1*:-'&G :A21-?(2&F -12:'&G 4*- &5@ 14*-5? 641 D14,5:-5F $4C2G5? 9 - @2? '& A'? :2D2:'-C 46 A52F 46 -A'? F5D21-E5&- -A2- -A5 2?-.E5&-'4&5F &2$'G2-41 A2F -A5 G 41C(-A5 G152-5?- @A':A 2::'F5&- 2&F :2D1':5 5$51 G12&-5F -4 E2&(46 G'$'&G A'? &2E5 -4 2 &5@ A5E'?DA515

55-? @515 &4@ 6'--5F 4*- 4& 2 E415 5J-5&F5F ?:2 5(@A':A E'GA- $'5('&F55F(@'-A -A5 ?D 5&F'F 5M*'DE5&-? 46 -A5 41-*G*5?5(@A4?5 +1' '2&- ?*:B :5??5? '& -A5 2?- 5J:'-5F -A5 5&$C 46 -A5'1 2?-' '2& 1'$2 ? A5 H'&G 4::2?'4&2 C -44H 2 ?A215 '& -A5 $4C2G5('&F5D5&F5&- C 46 -A5 '&-515?- @A':A 46 1'GA- +5 4&G5F -4 -A5 :14@& 6

A5 G4$51&E5&-(A4@5$51(152 'L5F 5?? 614E -A5?5 5JD5&?'$5 5&-51D1'?5?(-A2& '&F'$'F*2 ?(E2&C 46 @A4E(5&1':A5F +C -A5'1 466':'2 ?-2-'4&?(41 +C 2::'F5&-2 C 62 '&G '& @'-A ?4E5 A421F 46 -152?*15 2E4&G -A5 ?2$2G5?(15-*1&5F A4E5 -4 5J:'-5 -A5 5&$C 21'F :*D'F'-C 46 -A5'1 :4*&-1CE5& X *- -A5 ?D,1'- 46UF$5&-*15(@2? -44 A'GA 2E4&G -A5 2?-'B '2&? -4 15M*'15 ?*:A '&:5&-'$5(5?D5:'2 C @A5& 5JB :*F5F 614E '-? *?*2 6'5 F '& 61':2 2*(F *14D5

I $'$ = &&# / ?# $+ - / :#$" + ### / & + ' '" /'/ $> 6 + $ 2A 24 A 6 $ /#$ &&#= # $/ * $ $?# $# = / $ / &'#' #0 '##'&$-'# + #f _ /#$ &&#/ $ $'$ &&# / ': #L / &'#' #0 '##'&$-'### . $ > $" + ###'--'(3 24(0 # ' /' $&& /# " ? $+ + $? ?$' " /'G$ $0 L $ * 6# -$ # $' $+$ L /$ $' $ '0 / $"" /' -'#' / / # "'$* G> $ (#/ &' * +' ? '0 / ' *' ? ' #' % #0' ? 5B BEE & ' *' " / H &$-' J#'

-1'H'&G D1446 46 -A5 U62:' '-C @'-A @A':A -A5 14E2&-':2$2 '51? 46 -A2- F2C :4* F +5 F'15:-5F -4 -A'? &5@ :21551 46 F2&G51 4& -A5 4:52&(@2? G'$5& 2- -A5 -'E5 46 -A5 2?- E5F'-2-5F 5JD5F'-'4&' '&-4 -2 C *&F51 -A5 152- 2D-2'& ?M*2F14& 46 6'6-55& $5??5 ?(+4*&F 641 -A5 5@ 41 F(@2? -A5& 1'F'&G '& -A5 *2F2 M*'$'1 -? :4ED5E5&- @2? 'E'-5F -4 4&5 -A4*?2&F -@4 A*&F15F E5&N +*-(4& 51F'&2&F0? :4*&-51E2&F'&G 4&?2 $40? 5&-51D1'?5(E415 -A2& -A155 -A4*?2&F $4 *&-551?(E2&C 46 -A5E 46&4+ 5 62E' C(5M*'DD5F @'-A *&*?*2 E2GB &'6':5&:5 641 -A5 -2 '2& ?51$':5(A2?-5&5F -4 5$' 5(2&F D15??5F -4 +5 2FE'--5F '&-4 -A5 &F'2& 21E2B F2 9 5$' 5 '-?5 6 '& 2 E2&&51 F5D4D* 2-5F +C -A5 G5&512 65$51 46 5E'G12-'4&(?4 -A2- '- 2:B -*2 C ?55E5F(?2C? 2 :4&-5ED4121C(-4 +5 -5&2&-5F 4& C +C 65E2 5?(6

& -A'? *&'$51?2 5J:'-5E5&-(-A5 D14G15?? 46 F'?B :4$51C @2? D*?A5F 641@21F @'-A 2 ?*::5?? '&651'41('&F55F(-4 @A2- E'GA- A2$5 +55&' 5665:-5F '&. -A5 D15?5&- ?-2-5 46 &2*-':2 ?H' 2&F ?:'5&:5(+*- 5JB -1241F'&21C 641 -A5 -'E5? A5 @'&F'&G F5D-A? 46 -A5 * 6 46 5J':4 @515 D5&5-12-5F(2? @5 2? -A5 +41F51? 46 -A5 1':A +*- 1*GG5F '?-AE*? @A':A

I $ &?$- JJ#' 6 $& $#/ *#* & # A 6 $ /#$ &&#/ $ 0 * / &#$-'#''## U '# $ & ! +-#" J + & ## &? B'#'$ $ # /# $ + &$ $/ / /# '&? $'&# $ $ +$ -$ - # +* "# - $ $', $ ## +$ /# / V - J- '#" V $'$"# :#$""# * 2@. -# '#' 2

;' 4

;

:4&&5:-?' -A5' E51':2&' MD&-'&5&-?' &' < U<;(' 4B 1'F2' @2?' F'?:4$515F' +C' 2' 14E2&-':' 4 F' H&'GA-(' 94&:5' F5' 54&(' @A4(' '&?-52F' 46' -A5' E2G':2 ' 64*&B -2'&' 46' A52 -A(' 64*&F' A'?' G12$5' -A515 9' 4 '?(' 2&.' 4-A51' &2$'G2-41(' @A4' A2F' :A21G5' 46' 2&' 5JD5F'-'4&' D14,5:-5F' +C' 51F'&2&F(6' -4' 152:A' -A5' 4*-A' 52' +C' -A5' :'1:*E&2$'G2-'4&' 46' -A5' :4&-'&5&-(' 12&' F4@&' -A5' :42?-' 2?' 621' 2?' -A5' G152-' '4' F5' 2' 2-2(' @A515' A5' 2 ?4' @2?' :*-' 46 6 +C' -A5' ?2$2G5?' &' < < (' 2?:4' *&5L' F5' 2 +42' D5&5-12-5F(' @'-A' 2' A2&F6*' 46' E5&(' 2:14??' -A5' &2114@' D21-' 46' -A5' ?-AE*?' 46' 2B 1'5&(' 2&F' 614E' -A5' ?*EE'-' 46' -A5' 41F' 512?(' -A5' 6'1?-' 46' 2&C' *14D52&(' @2?' G155-5F' @'-A' -A5' 4&G.' D14E'?5F' $'?'4&' 46' -A5' ?4*-A51&' D:52& X

A5' '&-5 'G5&:5' 46' -A'?' 5$5&-' 5J:'-5F' 2' ?5&?2-'4&' '&' D2'&' '&651'41' 4& C' -4' -A2-' :2*?5F' +C' -A5' F'?:4B $51C' 46' E51':2' A5' G152-' 4+,5:-' @A':A' A2F' ?4' 4&G' 4::*D'5F' -A5' 'E2G'&2-'4&' 46' -A5' &2*-':2' E5&

I' 6 $' /#$' &&#/ =' $ ' / &' #' #0' #J' &$-' J' A' + ' $' ?' -$ # ?' J- /#L # ' # ' ?' G' 7 /' G? L ? ' ' ?' ? ' ' ? ' & # ' ?$' ' $' # " ' *' L +$ &' 0 > /' G?$' # ' * /' # ' ? ' *' ? ' - $' $ # ' ' *' ?' + ' #D# "' $ /' $ ' *$+# #$' *' ? +' #' ?$' *' /# $ /' / ' ' ?' # =*$ /' /# & ' ' *' ?' # # #--#' G? ' 0 ' 0 $&?' 0 $?' # ' G$ ' 6# '$/' '$ ' /' G# ?' & + + ' -# #' 0>' ' $ & * ' ' ' #' &?$-' ##' *' ?# ' 6# #>' *' ? ' # /' $

*' 6 $' /#$' &&#/ $=' ' / &' ## ' #0' #' &$-' '## *' ? ' #* ' *' ?# ' /$ # "' &$L '$ # ' * + ' ' # ' ? ' "$ ' # ' *' $ # $' 0# " $- ## ' 0>' ; # $ $' U' :#/$' / ' -$## ' 0 V' +' ## ' --' 2A 3F .' $ /' # ' *$+# #$' ' ? ' "# ?' $/ ' # ' '# "(' U' +-$ # ' *' +0 V' ? ' ?# /' ' L + ' *' $'$ (' $0 # ' & +-# $ # ' #' / ' /' ' ? ' # $ # ' *' ? ' +# ' -$ # ?' ' >$" ' G? ' * G /' -' ? ' 0 /' $&D' *' /# & ' >' 0 G ' +0 ' $ /' ' &=' &# ' / ' :#$"

46 *14D5(2&F 641E5F -A5 D*1D4?5 46 4 *E+*?0?
2?- $4C2G5(-A5 F'?:4$5'C 46 92 :4E E*&':2-'4& @'-A
-A5?5 621 @5?-51& @2-51?(@2? 2::4ED '?A5F A5
62E4*? D':5 ? 2&F?(614E @A':A -A5 41-*G*5?5
A2F F12@& ?*:A :4*&-5?? ?*E? 46 @52 -A(@515
?:2--515F 4$51 -A'? ?52 2&F -A5 2?-' '2&?(26-51 2
,4*1&5C 46 2 65@ 52G*5?(E'GA- 2*&:A -A5'1 +21H?
4& '-? M*'5- +4?4E(2&F 152:A(U&F D51A2D? :2'E(
-A5 :4$5-5F D4??5??'4&? 46 -A5'1 1'$2 ?(2? 62 '&G
@5?- 46 -A5 D2D2 '&5 46 F5E21:2-'4& *:A @515
-A5 F152E?(2&F ?*:A -A5 2:-*2 D14G15?? 46 F'?:4B
$51C(2- -A5 :4?5 46 51F'&2&F0? 15'G&

1 2FE'12-'4& 46 -A5 F2&-5?? A514'?E F'?D 2C5F
+C -A5 521 C D2&'?A0 &2$'G2-41? '& -A5'1 5J-1241F'B
&21C :21551 '? E*:A M*2 '6'5F +C 2 :4&?'F512-'4& 46
-A5 :1*5-'5? @'-A @A':A '- @2? -21&'?A5F N -44 G152-
-4 +5 5'-A51 D2 '2-5F 41 D2??5F 4$51 '& ?' 5&:5 +C
-A5 A'?-41'2& ? 4&G 2? ?2+5 2 '$5F(-A5 &B
F'2&? 64*&F 2& 566':'5&- 61'5&F 2&F D14-5:-41 N +*-
R A51 F52-A(K ?2C? -A5 $5&512+ 5I 2? 2?2?(R @2?
-A5 ?'G&2 641 -A5'1 F5?-1*:-'4& K9 E E5F'2-5 C 4&
-A2- 5$5&-(-A5 ?C?-5E 46 ' *C (& 41'G'&2 C
2*-A41'L5F(2? @5 A2$5 ?55&(+C 4 *E+*?(@A4
?55E? -4. A2$5 A2F &4 F4*+-(614E -A5 6'1?-(46 -A5
:14@&0? 2+?4 *-5 1'GA- 46 D14D51-C 4$51 -A5 &2B
-'$5?(P @2? :211'5F -4 '-? 6* 5J-5&- '& -A5 :4 4.

I $ $ $ $ + # = K$. , $ # $ > /$ 0 $
' < / / + # $ $ # >$ & + $ #L
- 235 $, $, # *$ $ $ ' $ # =
X & $: $ = >+$ /$?$& , , #=

;4 ;

=

&'5?($51C D2&'21F("A4@5$51 A*E+5(A2F A'? D14D41-'4& 46 ? 2$5? ℕ &F E5&(E2&C 46 -A5E &4- 4& C '&:2D2+ 5 46 5?-'E2-'&G -A5 2@6* 15?D4&?'+'B '-C 46-A5 ?'-*2-'4&(+*-@'-A4*- -A5 52?- -4*:A 46 A*E2&'-C '& -A5'1 &2-*15?(@515 '&F'$'F*2 C '&-1*?-B 5F @'-A -A5 *& 'E'-5F F'?D4?2 46 -A5 '$5? 2&F F5?B -'&'5? 46 -A5'1 65 4@.:152-*15? A5C 2+*?5F -A'? -1*?- '& -A5 G14??5?-'[E2&&51(-2?H'&G -A5 *&641-*B &2-5 &F'2& 621 +5C4&F A'? ?-15&G-A('&6 ':-'&G -A5 E4?- 156'&5F D*&'?AE5&-? 4& -A5 '&F4 5&-(2&F A*&-'&G F4@& -A4?5 @A4 15?'?-5F 41 5?:2D5F('H5 E2&C +52?-? 46 :A2?5(@'-A 6514:'4*? +44FB A4*&F? $51C ?-5D 46 -A5 @A'-5 E2&0? D14G15?? '& -A5 5@ 41 F E2C +5 ?2'F -4 A2$5 +55& 4& -A5 :41D?5 46 2 &2-'$5 2'-A '? ?-2GG515F +C -A5 15:'-2 46-A5 &*E+51 46 $':-'E? 'EE4 2-5F '& -A5?5 62'1 15G'4&? @'-A'& 2 $51C 65@ C521? 26-51 -A5 F'?B :4$51C ℕ 2&F -A5 A521- ?':H5&? 2- -A5 42-A?4E5 F5B -2' ? 46 +21+21'-'5? 15:41F5F +C 4&5 @A4('6 A'? ?CED2-A'5? A2$5 5F A'E.?4E5-'E5? -4 4$51:4 4*1(:2& &5$51 +5 ?*?D5:-5F 46 @' 6* C E'?.?-2-'&G 62:-? 46 @A':A A5 @2? 2& 5C5@'-&5?? 6 ?5 6'?A '&F'6.

V #+ $ $ $/ L NG G$ >/ > /'# ? $- /' $'$ &&# G 7 /'G# ?# ?# >= #"? /':#$" + '#'-54 > $ $* ? /# & ' >'$ /' 6 $ /#$ &&#/ = ?# # $//# ? J L $ /&'#' #0'###' &$-'#J A +# $ /'# ? '& , * ? $ '/ &'#' #0'###' &$-'#J A +# $ /'# ? '& , * ? $ '$ $ $ ' < /'/ = & >' '#= < /'/ = + '#'--'FF3'FF5 + '#'-'23) . 6 $? '$ # + #$ $/+# ?$ 6# -$ # G L * $ $ $ $ + * ? +' JL / & /'# ?$ G >=*#' - >'- -$ /'* ? '& &#' > $ '* +'2 EEE EEE' '2(EEE * ? /# 6 '$**# + ?$ /#$ &&#/ $ /&' + ?$ 2F EEE EEE' #' #' #0' &$-'J## . ? + =

6515&:5 -4 -A5 1'GA-?4 6-A5 41'G'&2 4::*D2&-?4 6-A5 ?4' '? 2 ?'&@A':A '5? 2- -A5 F441 46 E4?-4 6 -A5 D1'E'-'$5 *14D52& ?5-- 51?(@A5-A51 D2D'?- 41 D*1'B -2&(46 -A5 5@ 41 F N +*- '- '? 'GA- '& :4ED2B 1'?4& @'-A -A5 65216* 2E4*&- 46:1'E5? -4 +5 :A21G5F 4& -A5 521C D2&'?A :4 4&'?-?N :1'E5? -A2- A2$5(D51A2D?('& -A'? @41 F(+14*GA- F4@& -A5 15-1'+*-'4& 46 52$5&(@A':A A2? ?55& 6'- -4 -*1& -A'? 64*&-2'& 46 '&5JA2*?-'+ 5 @52 -A 2&F D14?D51'-C -4 -A5 &2-'4& '&-4 -A5 @2-51? 46 +'--51&5??

- E2C ?55E ?-12&G5 -A2- &4 15 '56@2? 2664 1F5F +C -A5 G4$51&E5&- -4 -A5?5 4DD15??5F ?*+,5:-?.N +*- 51F'&2&F('6 @5 E2C :15F'- 2? 2?2?(@2? &5$51 D51E'--5F -4 H&4@ -A5 5J-5&- 46 -A5 '&,*1'5? F4&5 -4 -A5E 9 5 @2? ?*114*&F5F +C E5& '& -A5 E2&2G5E5&- 46 -A5 &F'2& F5D21-E5&- @A4?5 '&-515?- '- @2? -4 H55D A'E '& 'G&412&:5 6 A5

#&$ #+$ *$ $ " $'$" - - $# + *& 0 # $" $ / " ?>- ? #&$?$ # G$ $ " ? G ' # ? *$# "# +$> $/#> 0 # * /* +' ?*$&# # # *' 0 # & $ /' ? +- $?$0# *' ? $ #' ? +#L #+ +' +' # ? &$& $ # G? ? +0 ?$/ /G# / /' $ * G ? $ /' +#"? 0 + $ # >$ & $# /

I ; ' .' /' / ' +' #' -' FF3

' ' #/ ' $' ? ' & 1 $>' ? # ? -' *' ?#$-$' G$ - - # *' 3EE'$ /'$? *' 22EE /#$ ' ' </' / ' + ' #' -' F43 .' > $ ' ? #' $+ '* +' 6 $' ? ' *# ' G$' # ? -' &$' ? ' $? + /$/ ' = &?# 0 ?' - +# + ' # ' ? ' /#$ ' / -$ + ' /#$ ' &&#/ $ ' / &' #' #0'#J'&$-' J#' .' ? ' $ = $+ /' - ' G$ ' ? ' $+ ' # /#'#/ $' '0> /# $ /' ' ?# ' /$ "? ' # ' $ / ' $ /' #+- # /' ? ' 0> ? ' &?/ D' ?# #-' * ' ?$' - # & C' / $?' ? ' J- # = & /' #" $' *$' ' * +' ? ' $? #&D# "'$ /'$+$ /'" $' G $?'$' & $ >' *' ? /#$ ' 0 $ /' '# / '?$' / ' /' ' *' ?# ' /#$ " ' '?#+' ; # = & $" $ ' ' $ ' 2' , # &' 4' /#$ ' 5

15E4&?-12&:5? 46 ?4E5 QL52 4*? E'??'4&21'5? 5F ''E(9 '& < <(-4 15651 -A5 ?*+,5:- 46 -A5 ' ? (-4 2 :4*&:' 46 ,*1'?-? 2&F -A54 4G'2&? A'? +4FC C'5 F5F -4 -A5 15D15?5&-2-'4&? 46 -A5 2F$4:2-5? 46 -A5 ?C?-5E(-A2- '- @2? '&F'?D5&?2+ 5 641 E2'&-2'&'&G -A5 :4 4&'5?(?'&:5 -A5 *14D52& @2? 2 -4G5-A51 *&5M*2 -4 2+4*1 '& -A'? -14D':2 : 'E2-5N 2&F -A2- '- E4154$51 26641F5F -A5 4& C :A2&:5 641 -A5 :4&$51?'4& 46 -A5 &F'2&(@A4(*&B 5?? :4ED5 5F(:4* F &5$51 +5 +14*GA- '& :4&-2:- @'-A -A5 @A'-5 E2& 6

& -A5?5 G14*&F?(51F'&2&F 4D5& C 2??*E5F -A5 15?D4&?'+' '-C -4 A'E?5 6 2&F A'? E'&'?-51? 46 E2'&-2'&'&G -A'? $':'4*? '&?-'-*-'4&N 2&F ?*+?5B M*5&- C '??*5F 2& 41F'&2&:5 -4 -A2- 5665:-(2::4EB D2&'5F(A4@5$51(+C 2 $21'5-C 46 A*E2&5 2&F 5M*'.

? +# #&$ $ / ? +# # $# ? #'& /#'0'#' /' $0 /' G# ? G $ # /' K $'$ /'& $" '* ? ?'& ' L # *' ? $#' $ /' ?'# L /#&$ # *' ? #' $ $' #"? ? G ? + G? #"? /' ?'*# *' ? , # #L # '#' ? #' G $ /'2 &? -- # + $>' ? $+ - # &#- $/' / /#** &# & + $ & %

$' >'G $0 # ? /'* +' ? - # $/'$ $" '* $&, # L # '" #&? '#' ** /' ' ? /' 7 /' F ?$ '#*' ? >'G /' ?#'G /' '!> #*>' $' L >' # &'!8 (')(' + '; *' H $ + $J#+' * +' $ -$ # ? &? &?+$ *' ? #J ?'& L >'% ? G? $ " + G?#&?' & +- ? /' ?' +' *' G?$?' 0 # &' $#/' + /#** >'# '/ * &' *'$0 # # # # " $ >'$& $ /'& " # $0 $&'- # &#- # #' $ G $0 G?# #' J- $ /' / & ' ?' +# & / &' *'?# '& >+ G# ?' $'* L / +'G?#&?' ? G' ?'" /'0# ? -' D G' ? '* $' ?$ ' ?$' *' ?#' $D

-2+ 5 15G* 2-'4&? 641 15?--02'&'&G '-? 2+*?5 9 A5 ':5&?5 @2? 5E+12:5F '&'-? 6* 5J-5&-N -A5 15G*B 2-'4&? @515 4D5& C F'?15G21F5F P 5$512 C521? 26-51('& < < (2? 2?2?(E4$5F +C -A5P ?D5:-2: 5 46 A*E2& ?*6651'&G(15-*1&5F -4 D2'&(2&F D52F5F -A5 :2*?5 46 -A5 '&,*15F &2-'$5 '& -4&5? @A':A E2F5 -A5 FC'&G E4&2'0:A -15E+ 5 4& A'? -A14&5 -@2? -44 2-5(A4@5$51(641 -A5 H'&G -4 5J5:*-5 -A5 15E5F'2 E52?*15? A5 :4&-5ED 2-5F P A5 566'B :'5&- '&-516515&:5 46 Z'E5&5?(@A4 ?5&- 2 :4EE'?B ?'4& 641 -A5 D*1D4?5 -4 '?D2&'4 2(@2? 2--5&F5F @'-A &4 D51E2&5&- 15?* -?N 2&F -A5 '&F562-'G2+ 5 R D14-5:-41 46 -A5 &F'2&?K @2? 56- -4 ?*5 641 15B F15?? 2- -A5 :4*1- 46 A21 5?(2&F -4 6*1&'?A 2 ?D 5&B F'F('6 &4- 2 ?4 '-21C 5J2ED 5 -A515(46 2 +4?4E D5&5-12-5F @'-A -A5 -1*5 ?D'1'- 46 A1'?-'2& DA'B 2&-A14DC N

1 & - / > / $ =
/#$ " 2(?' 2@E5 #0
'# # 3 >2 A 6 $ L
/# &&#/ $ / &' #' #0
#J &$- J#'
X ? J J- $ >
"? ? 0 , & /#L
*' ?# " ' # -$ # ? + L
#&$ U " ' + V $>
6 U?$ / + &?*
? $0 #"# $? -$ # ?V
/ 6# > $ & *C
$ ' '#' -)) . 7? '
- # & #$ & / +$>
/+ &?" / ? =
"# + $? ' >
+0 $ /- # # *' ?
? +$ - '# # **#&#
- *' *' # # ' # **#$&>_
% 6 $ /#$ &&#/ L

$ / &' ## #0 ## &$- ### A
$ $ $ + = ' <
/ / + +'#'-F45
a ? +$ D$0 /# & L
0 G ? & - L
' /$ $ /' $ $ $ 0 * $
& ++# # $+ /0> ?$
: # 2@@E ? * + '# /#L
&$ /? '- & # *? $0 L
#"# 0> ?'& / &' *? L
$ # G$ / ? #'#/ $
#"?0 < 0 ? -$ # ?
- # / ?$ U ? 0 L
?$'# *? 'P G G$ ' - L
& / * ? # #$ < ?$?
$G *' G$ $ $G *#" .
0 ?$ *'P ? # *'
" $& + &> - $& " /=G#
$ /&?$ # >V ' . / /
+'#'-'4)(. ?

S

A2$5 5 ?5@A515 5J2A''&5F -A5 D4 ':C D*1?*5F ,+C -A5 2-A4 ':?4$515'G&? '& -A5 G4$51&E5&- 46 -A5'1 :4 4&'5? A5 ?*DD C 46 D15:'4*? E5-2 ? C'5 F5F +C -A5E 5$5&-*2 C(D14$5F 621 G152-51 -A2& A2F 5$51 5&-515F '&-4 -A5 :4&:5D-'4& 46 -A5 E4?- ?2&G*'&5 46 -A5 521 C F'?:4$5151? A5'1 D14 '6':? 4' 2&F G5&'2 : 'E2-5(E4154$51(26641F5F 2& '&6'B &'-5 $21'5-C 46 $5G5-2+ 5 D14F*:-?(@A':A E'GA- A2$5 6*1&'?A5F 2& *& 'E'-5F :4EE51:5 @'-A -A5 E4-A51 :4*&-1C ! &F51 2 ,*F':'4*? D14-5:-'4&9 -A5'1 D4D* 2-'4& 2&F D14F*:-'4&?(?-52F' C '&:152?B '&G(@4* F A2$5 5& 21G5F(-4 2& '&:2 :* 2+ 5 5J-5&-(-A5 G5&512 15?4*1:5? 46 -A5 5ED'15 *:A('&F55F(E'GA- A2$5 +55& -A5 15?* - 46 2 @'?5 ?C?-5E 46 5G'? 2-'4&

*- -A5 -1*5 D1'&:'D 5? 46 :4 4&'2 D4 ':C @515 ?2F C E'?*&F51?-44F '& -A5 ?'J-55&-A :5&-*1C A5 F'?:4$51C 46 2 @41 F @2? 5?-'E2-5F('H5 -A2- 46 2 1':A E'&5(+C R-A5 $2 *5 46 '-? 15-*1&? '& G4 F 2&F ?' $51 *:A 46 ?2+5 20? 5G'? 2-'4&('- '? -1*5('? 46 -A2- :4ED15A5&?'$5 :A212:-51 @A':A ?A4@? -A2- ?A5 44H5F -4 A'GA51 2&F 621 &4+ 51 4+,5:-? *- @'-A E*:A9 -A2- '? G44F -A515 @2?" E'&G 5F(2? '& E4?- 46 A51 '&?-'-*-'4&?(4&5 G51E 46 5$' (46 '-- 5 E4E5&- 2- -A5 -'E5 '&F55F(+*- @A':A(*&F51 -A5 $':'4*?:* -*15 46 A51 ?*::5??41?(?A4- *D -4 2 A5'GA- -A2- 4$51?A2F4@5F 2&F + 'GA-5F 2 -A5 15?- A'? @2? -A5 ?D'1'- 46 15?-1':-'4& 2&F E4&4D4 C(2GG12.

-$ #$ /' *# ' - & /' ?' $'$? #>'* '- & # "'$ ' P G '$ /' ? ', /' ? +'$' ? '# *#/

$2-5F +C -A5 ?*+?5M*5&- 2@? 46 51F'&2&F(2&F
:211'5F -4 2& 5J-5&- *&F51 -A5 *?-1'2& FC&2?-C
-A2- D212 CL5F :4 4&'2 -12F5

! &F51 -A5'1 E4?- '&G5&'4*? C D51$51?5 ?C?-5E 46
2@?(-A5 '&-515?-? 46 +4-A -A5 D215&- :4*&-1C 2&F
-A5 :4 4&'5? @515 ?2:1'6':5F A5 2--51(:4&F5E&.
5F -4 44H 641 ?*DD '5? -4 2& '&:4ED5-5&- ?4*1:5(
@515 E'?512+ C F@2165F '& -A5'1 G14@-A @A' 5 -A5
641E51 :4&-1'$5F -4 :4&$51- -A5 &*-1'E5&- @A':A
?A5 5J-41-5F 614E -A5 :4 4&'5? '&-4 2 62-2 D4'?4&
A5 ?-152E? 46 @52 -A @A':A 6 4@5F '& 614E -A5
?' $51 M*211'5? 46 V2:2-5:2? 2&F 4-4?'(@515 ,52B
4*? C 4:H5F *D @'-A'& -A5 'E'-? 46 -A5 5&'&?* 2
A5 G152- D14+ 5E(D14D4?5F +C -A5 D2&'?A 5G'?B
2-'4& 46 -A5 ?'J-55&-A :5&-*1C(@2? -A5 15F*:-'4&
46 D1':5? '& -A5 H'&GF4E -4 -A5 ?2E5 5$5 2? '&
4-A51 *14D52& &2-'4&? $51C 2@ -A2- @2? D2??B
5F(A4@5$51(-5&F5F(+C '-? 15?-1':-'$5 :A212:-51(-4
2*GE5&- -A5 5$' A5 G4 F5&' -'U5 @A':A(D51B
E'--5F 2 6155 $5&-(@4* F A2$5 651-' 'L5F -A5 15G'4&
-A14*GA @A':A '- D4*15F(&4@ +*1'5F -A5 2&F *&B
F51 2 F5 *G5 @A':A + 'GA-5F 5$51C G155& 2&F '$'&G
-A'&G G1':* -*15(:4EE51:5(E2&*62:-*15?(5$51 MdU
+12&:A 46 &2-'4&2 '&F*?-1C 2&F 'ED14$5E5&-(2&B
G*'?A5F 2&F 65 -4 F5:2C 2&F -A5 &2-'4&('H5 -A5
A1CG'2& E4&21:A(@A4 -*1&5F 2 -A2- A5 -4*:A5F
-4 G4 F(:*1?5F +C -A5 $51C :4&?*EE2-'4& 46 '-?
@'?A5?(@2? D441 '& -A5 E'F?- 46 '-? -152?*15?

14E -A'? ?2F D':-*15(5- *? -*1& -4 -A2- D15B
?5&-5F +CK-A5 D51'4F 46 4*1 '?-41C(@A5&(-A5 : 4*F?

2&F F21H&5?? A2$'&G D2??5F 2@2C(' 2 &5@ E 41&?55EB 5F -4 +152H *D4& -A5 12-'4& ! &F51 -A5 6'1E + *- -5ED512-5 ?@2C 46 51F'&2&F 2&F ?2+5 2(' -A5 G152- :A2&G5?' @5 A2$5 &4-':5F @515 5665:-5F @'-A4*- :4&B $* ?'4& '& -A5 ?-2-5 N 4& -A5 :4&-121C(' -A5 5 5E5&-?' 46 -A5 ?4:'2 ?C?-5E(' @A':A +56415 ,2115F ?4 F'?:41FB 2&- C(' @515 +14*GA- '&-4 A21E4&'4*?' 2:-'4& A5 15?- 5??' ?D'1'- 46 -A5 &4+ 5?' @2?' -*1&5F 614E :'$' 62:-'4&' -4 -A5 A4&4*12+ 5 :21551 46 D*+ ':' ?51$':5(' @A5-A51 '& 2112?' 41 5--51? A5 D54D 5 2- 21G5(' 2??*15F 46 -A5 ?5:*1'-C 46 D1'$2-5 1'GA-?(' @515 4::*B D'5F @'-A -A5 F'66515&- +12&:A5?' 46 D14F*:-'$5 2+4*1 12F5(' 2?' '?' 2+*&F2&- C ?A4@& +C -A5 5G'? 2-'4& 46 -A5 D51'4F(' A2F &4- C5-62 5&' '&-4 -A5 F'?:15F'- @A':A 2--2:A5F -4 '- '& 2-51 -'E5? 9 A5 D15:'4*?' E5B -2 ?(' '&?-52F 46 6 4@'&G '&' ?4 2+*&F2&- C 2?' -4 D2 ?C -A5 21E 46 '&F*?-1C(' ?51$5F 4& C -4 ?-'E* 2-5

' '#' >' & $ >' L ?' J &# ' $ >' + &?$ #&$' #&' ?'& +- ' $ " $" ' ' &$# ' !'6 & V' $>' $-' *' ?# #-' C ' $G ' G?#&?' / L +$ >' ' ?$' ' * ' $' #" $ ' ?'+ ' * '+ &?$ #&' '# $" '# ' ?# '- '# & '# 'G?#&?' $ ' $' ? ' *' 0 $&D +# ?' ? '$"$0 / ' + "" ' $ /' ? +$D $? =/ '$ /' ?$ "+ ' ' G ' $#' ' ?' #D ' $' U' *#&# ' +%(' *' G?# ' ?'*$ # ' ? +$D ' M (< Y&' G$' $'* #" R' +' ' G?#+ #&$' /# # & # ' - L / ' $& $' +'#'-$ '###'-' '$# ' #' $ # ' #' * &' (E< + '###'-$ ' ##' --'I42)' ' ?' + ' ? +0 ' && -$L 423 .' ' $ ' + ' #0 ' # ' ' +$ ' *" '0 /' + #D ' ?' 0! &'0>' $ L +$>' ?' $' & $&?+$ ' $&, >' &'7?# ' ?' # " # ' $?' & # ' ' $ >' ? ' + #L *' 0 $/ C' '* +' -$# ' $ ' G# ? ' /# -$ $"# "' ?# ' L -' ((0# # >' G?#&?' #' $#/' ' 43 *' U' ?' # '$' 0 G ' ?' # ' ?' + $ ' G?# '< 0 '?' $&, # # # ' *' + >' $ /' ?' *#J ' ' #' $' # / #0 ' $# ' #* # ' *' - #& R' 6 + ' 0 '

A5 6415'G& '&-51:4*1?5 6 -A5 :4*&-1C @2? 5$51C F2C E415 @'F5 C 5J-5&F5F 51 2G5&-? 2&F :4&B ?* ? @515 -4 +5 64*&F '& 2 -A5 D1'&:'D2 D41-? 46 -A5 5F'-5112&52& 2&F -A5 2 -': 9 A5 D2&'?A E21'&51('&?-52F 46 :155D'&G 2 4&G -A5 +52-5& -12:H 46 '& 2&F &2$'G2-'4&(&4@ ?-1*:H +4 F C 2:14?? -A5 G152- @5?-51& 4:52& A5 &5@ F'?:4$51'5? A2F U :4&$51-5F -A5 2&F -12F5 @'-A &F'2 '&-4 2 ?52 -12F5 2&F -A5 &2-'4&? 46 -A5 5&'&?* 2(@A4 A2F A'-A51-4 2'& 15E4-5 614E -A5 G152- A'GA@2C? 46 :4EE51:5(&4@ +5:2E5 -A5 62:-41? 2&F :211'51? 46 *14D5

A5 6 4*1'?A'&G :4&F'-'4& 46 -A5 &2-'4& @2? ?55& '& -A5 @52 -A 2&F D4D* 2-'4& 46 '-? :'-'5?(-A5 15B $5&*5? 46 @A':A(2*GE5&-5F '& 2 -4 2 ?*1D1'?'&G

!'# ? > #+ G? # L & $ # " / $ / # ' $ *$L ' $0 ' # / > V $> -$ ## $> ###. / #L $ & * P ?! 2(5) & +- $# * ? &$ &# > * ? - &# + $ $ / ? # # L **#&# &> ? / +$ / * $/ $"+$ #&$ / Q >= * 54. $--$? GL ' * +9 #"$?$? #+- $ # * " / * + ? G 7 / 0 "$?$' $ #0 ** & ? (- #& * & ++ /## * + ?$ ' > > $ $ / '# $ - (2@

?$ +$/ L ' $ J $& * + ? 6$ #$? G# " ?$? $/ * $ # G# ?(" $ / G$ ' > & #/ $0 # $0 $(#+

6# > * " $ / ' # ' - 5E. - $"+$ #& * P > F2 2(5(* ? & # *$ & $ $ " # ? & ++ &#$ $0 # ?+ # " $ / $ & $ > $ / ? G # ? ? J # - #'# " G$ +- G / ? $ $ / / +# # 0 G + L &?$ < U G?#&? V $ $> ? - $# = - D /# $ & W0# ? ?$ / * $G> $ ' 0 "? $ & < - , - $ $ & # > #0 / $/ / +$ $, - +$ - > , * # $/ / +$ $, (K (= $"+$ #L &$ / > * 2(BA 2(3. ?# # # 0 * ? " $ #+- $ & # $ #

;

5J-5&-(' A2F' '&:152?5F(' ' '?4E5(' 641-C' 2&F' 5$5&' 6'6-C' 64,F' +5C4&F' @A2-' -A5C' @515' 2-' -A5' :4E E5&:5E5&-' 46' -A5' 15'G&N9' -A5' 2&:'5&-' 2&F' 41F C' 4 5F4N *1G4?(' @'-A' ,-?' +*?- '&G(' '&F*?-1'4*?' -12F51?'N6' 2 2F4 'F(' ?5&F'&G' 641-A' '-?' -A'1-C' -A4*?2&F' @21B 1'41?' 614E' '-?' G2-5?(' @A515' -A5' @A4 5' D4D* 2-'4&' &4@' ?:21:5 C' 152:A5?' -@4.-A'1F?' 46' -A2-' &*E +51N XK 41F4$2(' '&' -A5' ?4*-A(' 2&F' -A5' E2G&'6':5&-' 12&2B F2(' &2-*12 'LU' '&' *14D5' -A5' 21-?' 2&F' *J*1'5?' 46' -A5' 2?-N 212G4??2(' R' -A5' 2+*&F2&-(K' 2?' ?A5' @2?' :2 5F' 614E' A51' 61*'-6*' -511'-41CN 2 5&:'2(' R' -A5' +52*-'6* 21:5 4&2(' 1'$2 '&G' '&' '&F5D5&B F5&:5' 2&F' E21'-'E5' 5&-51D1'?5' -A5' D14*F5?-' 46' -A5' -2 '2&' 15D*+ ':?'Ng' 5F'&2' F5' 2ED4(' @A4?5' 62'1?

1' ?' #J?' ' +' *' ?' & +' '" $ /' 0 &$ ' $' + #' *' ?' &$/ +>' *' '#/$' & ' '+$ '>'& ' =' 6# >' & $# ' $' &? / ' *' / ' / ' ' &$ ' ' J=' ?' - &#' ' ' $** / /' &# $' $' $ ' + &$ #&$' ' >' 0>' ?' &# #' *' $ #' #' ?' ' $' #0 $ ' ' , ' > $ '2()' 2(3F' $ /' 2@E(' $ $' $' + &$/ #$ '>'?$K ' +0 $&# "' *' & ' ?' & +L #&$' $' &# /$/' ' + >' *# ' + & + ' $ /' & ' *' $0 L >' #0 $ V' $' + $=' $' #" ' ?' #"# $' / & L 0 ' * 0' 2B .' ' G# ' ' 0' + ' J# ' #' ?' $ &?#' ' *' $ >' ' + ' #' - ' ' ' #+$ &$ ' 7 '+$>' #& ' ?' G# ?' $' *# =& /' -#& ' $ "' $+++' $ /' " $'# & $ ' *' / -$ /' " >' ?$ ' ' *' $J '# ' / ' -$ #& $ >' #/ ' ?$' "#' ' *' ?' * + ' $ /' #' ' '# <' ?' * + ' &# >' ?' ' $0 ' 8 ?#&' &$-#L ? #'# "' * +' #' +$ *$& # ' $ ' #' ?# ' R $ ' #' -$# V' $ /' ?' $ ' * +' ?' /#$ ' &?$-' J## $/ ' '# ' #' 2@E(' * L #' $ / '$ ' 6# ' / ' +-' # ? /' $'$' ?' *' #' G? ' $ ' : ' +' #' -' BE ' ' $&# ' ' a' 'G$' $' & ++ ' $># "' ' 00' ' $>' ' $V' $>' # ' $'$"# C' #+ ' R $ & L $ # ' *' ?' $ ' &# >' $' $' #&&$' $ $" $' $' ?$ $' R' " ' &# $' # 0$ /#$' # ' :$ #$' $' ? + $R' :#$"=' , ' / ' 0!$ ' $ # + " =' "# ' * 0' @.' ? '" $ / '$ /' ' & +' ? +0 ' >' ' &?#& & ++ &#$' - / ' *' ?

@515 2 152FC -A5 G152- 'D21- 641 -A5 :4E E51:'2 5J:A2&G5? 46 -A5 5&'&?* 2 9 2&F 5$' 5(6 -A5 G4 F5& G2-5 46 -A5 &F'5?(@A4?5 M*2C? +5G2& -4 +5 -A14&G5F @'-A E51:A2&-? 614E -A5 E4?- F'?-2&- :4*&-1'5? 46 *14D5

A5 15?4*1:5? 46 -A5 '&A2+'-2&-? @515 F'?D 2C5F '& -A5 D2 2:5? 2&F D*+ ':5F'6':5?(64*&-2'&?(2M*5B F*:-?(G21F5&?(2&F 4-A51 @41H? 46 *-' '-C 2&F 41&2B E5&- A'? 2$'?A 5JD5&F'-*15 @2? F'15:-5F +C 2& 'ED14$5F -2?-5 1:A'-5:-*15 @2? ?-*F'5F 4& D*151 D1'&:'D 5? -A2& +5641 5(2&F(@'-A -A5 ?'?-51 21-? 46 F5?'G&(?A4@5F -A5 '&6 *5&:5 46 -A5 &5@ :4&&5J'4&

*# = $+ / &# > G?#&? * + ? 0! & *' $-+$ >($L 0 $ G D ?$' 0 **#L &# >/# - $> /'# $ '&?$-L ##' *' ?# 6# > I ! F ;) (' (K ' &H $> $-+$ > U , $ * #$ $ > $ *$+ $ # + - / > $ #& V Y& + / $ & $ + ###' - 4@B . ' > & > " $ & $? $G *' ?# #+ G# ? G ? $ $0 *' ? -- #L # ? $"+$ #&$ * 2(B $ / ? /# $ & * + ? $ &?#' *' #+$ &$ $- /' + / &$/ + '#' -- F(5 F@F - '#/# " * ? & # *0 # /# " $ / ? $&& + + L /$ # * ? ! " $ *' $/ V 2@FE * > $ $* /# $ /(/ $?' ? '&# > # $ - # # ? " L - /' ? $# /' 0> # + &?$ # ? & *# $ + ?$? ' *' ? & G G /' - 0$0 >' 0

$0 + * ' $ > $ 0#/ - FB(. $'$"# G? '# # / /# $ + #J > $ $ G? '# G$ 0 # 0 $, #' &$ #+ > # & + + &#$ '#+- $ & ! L /# $ 0 $ $ -# $ /# 0 &$ $0 /$ $ $ $# &? * # &? *$ " ($ / &? '# /# $ -$" $ *$ - &? #' - # -$"$ -# /# , &? # *$ #$ I I I I I ' $ * #$ $0 /$ & /# + & + $ - $ /# - &#$ # $ $#' &? ' " $ /# "$ < + $ +$"'"# *$&- & / &? ' '# *$&&#$ ' &$+0#! V :#$"'"# * 4B

*' / ; # ' '# '$ '# $ ' '# +$ $'# $V ? - ' 0 $&& /# " 9 ###"$' # ' $ ' /' $? #+ ' H $ / L '# $ - 234

=

@'-A -2 C 'F -A5 6'1?- G 52E?6 -A2- 5J:5 5&:5 @A':A ?A5F ?*:A *?-15 4$51 -A5 D2&'?A ?:A44 2- -A5 : 4?5 46 -A5 :5&-*1C 9 ?-' E415 F5:'F5F 'ED* ?5 @2? G'$5& -4 5--51? 415 D1'&-'&G.D15??5? @515 D14+2+ C 2-9@41H '& D2'& '& -A5 '&62&:C 46 -A5 21-U -A2& 2- -A5 D15?5&- F2C 6 &:'5&- ?5E'B &21'5? @515 15E4F5 5FM &5@ 4&5? @515 :152-5F 21:5 4&2(2 2E2&:2(2&F :2 2(@A4?5 : 4'?-515F ?4 '-*F5? 215 &4@ -A5 G12$5U 12-A51 -A2& -A5 &*1?5B 1C 46 ?:'5&:5(-A5& ?@21E5F @'-A -A4*?2&F? 46 F'?B :'D 5?(@A4(*&F51 -A5 G5&514*? D2-14&2G5 46 -A5 G4$51&E5&-(64*&F 5--51G -A5 ?*15?- D2-A -4 D1565 1B E5&-%M $5& -A5 'GA-51 +12&:A5? 46 '-512-*15

1 ? + +# & -L G * ? + -$ * #" <A $ #" #$ #- / "$ A &?# * > * + $ > G? ? $ G$ $/'$ &# "M $-#/ > - * & # # ? &? * #&?$ " ? + && * $ &?# & $ $&?# ' + G$? &$? / $ 8 $ $/$ 0> # " / # / K #" /$/ / 8 $ $L /$ * 3F A + / $ &$/ / 6# + '# J'# X $ $> + &# $ & + - ! /" ! / +# + - # &#-# / $0 &#+# * +$ & + $ #+ - $ -$ $, $ &$0 / &# $ / >$ / #" / &#+ V "# / $ $0 + / $ &$/ / 6# + '# # &# $ &?$- J#J< $ &?$- JJ# A ? $"+$= #&$ / > V M& +- # '$L # /# $ & / *# # " ? - #'# " * $$+$ &$ $ / :$ $/ #/ ? +$ * &# = * #- " / " $ / * &# ? ? &?$# * ? # ## $ $ 0'#$ $ > / # L * & & - # 2(A F2 . U , V $> ? #0 $ $ " $" * ? $ $G U /# " $ / / $ &# &#$ > $- / ** M$ $ > >*$K $ 0/# > $ $ $0#/ >? $/ > $& &#= $ '# / > - , / $ > $ #" $ / $ $ &$ /#$ $ $ #$/$ / $ / /$ #0 = $/ - , $ /$/$ - - L $ $0#/ > &# V $ $M $ & 0 @ ? 2(5@ . * G / ? $ > /#** - # &#- G?#&? &? & # ?$' 0 & L / & /' # + / +' #+ ? ?#+ $/ 0 $/ C * +

S

-' @2?' -2H5&(' E4154$51U' +56415U' -A5' &2-'4&' A2F' -'E5' -4' 15:1*'-'614E' -A5' 4&G' 2&F' 5JA2*?-'&G' ?-1*GG 5' 46' -A5' 441'?A' @21(' 2&F' -@5&-C.6'$5' C521?' +56415' -A5' : 4?5' 46' -A5' 15'G&(' @A5&' -A5' D4D* 2-'4&(' *&F51' :'1B :*E?-2&:5?' D5:* '21 C' 62$4*12+ 5(' E*?-' A2$5' ?@5 B 5F' -4' 2' E*:A' 21G51' 2E4*&-' A*?' :'1:*E?:1'+5F(' A4@5$51(' '-' @2?' D14+2+ C' :4&?'F512+ C' '&' 2F$2&:5' 46' -A2-' 46' &G 2&F' 2-' -A5' ?2E5' D51'4F 9' 4@' A2$5' -A5' F5?-'&'5?' 46' -A5' -@4':4*&-1'5?' ?'&:5' +55&' 15$51?5FP

A5' -511'-41'2' 'E'-?' 46' -A5' E4&21:AC(' '&' -A5' E52&' -'E5(' @5&-' 4&' 5JD2&F'&G' +5C4&F' 5J2ED 5N' > 2?-'5(' 2&F' 54&(' '&F'??4*+ C' *&'-5F' @'-A' -A5' :14@&' 46' 12G4&' 2&F' '-?' 6415'G&' F5D5&F5&:'5?(' ':'B C' 2&F' 21F'&'2(' @'-A' -A5' H'&GF4E?' 46' 12&2F2(' 2$2115(' 2&F' 2D 5?(' @'-A' -A5' 2&21'5?(' 12&(' 2&F' -A5' 4-A51' ?5-- 5E5&-?' '&' 61':2(' 2&F' @'-A' -A5' '?B 2&F?' 2&F' $2?-':4&-'&5&-?' 46' E51':2' 4' -A5?5(' +142F' F4E2'&?' -A5' :4ED15A5&?'$5' ?:A5E5?' 46' -A5' ?4$515'G&?' @4* F' A2$5' 2FF5F' 41-*G2N' 2&F' -A5'1' 2112&G5E5&-?' 641' -A'?(' 2-A4*GA' F5652-5F' 641' -A5

#' **#& '#' ?'D# "/ +' *' $L " '#*' $&? /'G# ?' ?' $+' # / >' $' ? ' #' $ # ' G /'/ 0 '$** /'?'+ $ ' * ' & &#"' ?' & /' #L +$ ' '& ' -&#"' ?$' & >

I' 6$ $+'#'?#'U' # L # $'6# >' *' "$ /V' L #+$ ' ?' - - $# ' *' ?' $ +' #'2(3@' $'4 EEE EEE' : '#'-'2E.' ?'/#& -$ L &# '? G ' ' *' ?'0 '?# L

#$ ' ?#' 0!&' - ' ' ?' /#**#& >' *' $ #'# "' $' ' ' $ - 0$0 ' ' 6 + ' ' ?' $? #>' *' #' /G$ /' D' - ' ?'- - $# ' *' "$ /' # & /# "' - - ' *'$ ' .'$ & >' $ ' #' 2@33' $' > 5EE EEE' ? ?# #$' &# ' / '#&'8 #&&#$ /# #'? G ' ' * '$? ' #+$ ' $'?#"?' $ F EEE' EEE'* ' ?' $+' #" ' *' ; ' #K$0 ?' 6# >' *' "$ /'' '#' -- /'###

D15?5&-(4D5&5F -A5 @2C -4 9 '-? 5$5&-*2 :4ED 5-'4& *&F51 A' 'D -A5 5:4&F 9

A5 D5--C ?-2-5? @A':A A2F +56415 ?@21E5F 4$51 -A5 5&'&?* 2(&5*-12 'L'&G 52:A 4-A51 ? 4D512-'4&?9 2&F D15$5&-'&G 2&C 5665:-'$5 E4$5E5&-' 2+142F(@515 &4@ 2E2 G2E2-5F '&-4 4&5 @A4 5 5:-'4&2 ,52 4*?'5? 2&F 2&-'D2-A'5?('&F55F(@515 -44 ?-*1F' C 144-5F -4 +5 2- 4&:5 5J-'&G*'?A5F + *-' -A5C G12F*B 2 C ?*+?'F5F *&F51 -A5 '&6 *5&:5 46 2 :4E E4& G4B \$51&E5&-' 2&F :4E E *&'-C 46 '&-515?-? E415 5& 21G5F ?5&-'E5&-' @2? '&6*?5F '&-4 -A5 D54D 5(@A4('& -A5'1 64'05'G& 15 2-'4&?(2- 52?-(2??*E5F -A5 2--'B -*F5 46 4&5 G152-' &2-'4& A5 &2E5? 46 2?-' '2& 2&F 12G4&5?5 @515 E51G5F '& -A5 :4ED15A5&?'\$5 4&5 46 D2&'21F 2&F D2'&(@'-A 2& 5ED'15 @A':A ?-15-:A5F 4\$51 -A155 M*21-51? 46 -A5 G 4+5(2&F @A':A 2 E4?-' 152 'L5F -A5 D14*F +42?-' -A2-' -A5 ?*& &5\$51 ?5- @'-A'& A51 +41F51?(&4@ 14?5(&4-' -4 -A5 6'1?-' : 2?? 4& C(+*-' -4 -A5 6'1?-' D 2:5('& -A5 ?:2 5 46 *14D52& D4@51?

A5 5J-1241F'&21C :'1:*'&?-2&:5? 46 -A5 :4*&-1C -5&F5F &2-*12 C -4 &4*1'?A -A5 46-C(14E2&-':M*2B '-'5?(2&F -A5 ?4E5@A2-' 5J2GG512-5F -4&5 46 ?5&-'B E5&-(@A':A 2 @2C? D51\$2F5F -A5 &2-'4&2 :A212:-51 A5 2G5 46 :A'\$2 1C A2F &4-' 62F5F 2@2C '& D2'&(2? '& E4?-' 4-A51 2&F? 6 -' @2? 64?-515F '& -'E5

I ?#-' '&\$#+ /' ?' L \$0 \$' G? ' \$' ?' \$/ ' " '&G+' #' #"?' *' ?#' +\$>' + +0 ' +\$ # /' Q# "' + ? ' \$ /' ?#' G#* ' 0 ?' +\$ / & / /' * +' \$ #\$' ?# /' *' /' \$J ' + ' ' ' /\$ "? ' *' /# \$ /' \$ / ?' # ' ? ' -\$#/' ' ?

S

46 D52:5 +C -A5 -4*1&5C?(,4*?-?(2&F 4-A51 @21 'H5 D2G52&-?(@A':A G12:5F -A5 :4*1- 46 ?2+5 2 9 - G 52E5F 4*-(2? @5 A2$5 ?55&('& -A5 -2 '2& :2E D2'G&? *&F51 4&?2 $4 F5 41F4$2(2&F ?A4&5 641-A '& 2 '-? ?D 5&F4*1? '& -A5 @21 46 12&2F2 R A'? @2? 2 1'GA- G5&- 5 @21(K ?2C? 2$2G'514('& 2 D2? ?2G5 -44 D51-'&5&- -4 +5 4&&'--5F(R '& @A':A(2? 6'15 21E? @515 :4ED212-'$5 C '-- 5 *?5F(52:A H&'GA- A2F -A5 4DD41-*&'-C 46 ?A4@'&G A'? D51?4&2 D14@ 5?? N 2&F 1215 @2? '- -A2- 2 F2C D2??5F @'-A4*- ?4E5 652- 46 21E? 2&F $2 414*? 5JD 4'- A5 &4+' '-C 2&F :A'$2 1C 46 -A5 2&F 2 -A14&G5F -A515 -4 G2-A51 15&4@& b*55& ?2+5 (@A4 2--5&F5F @'-A A51 @A4 5 :4*1-(+152-A5F :4*12G5 '&-4 5$51C A521- A515 @2? ?:21:5 2 :2$2 '51 @A4 @2? &4- 5&2E4*15F 46 ?4E5 4&5 41 4-A51 46 A51 2F'5?(-A5 @'-&5?? 46 A'? 2:A'5$5E5&-?(2&F @A4(2? ?A5

$" *&?#'$ ># #+ <
$ /# **#&# '#/ & *
/ &$># " $ / ?$
#&?$ / ? "? # & L
$ > # $ /# $ & L
, # # " ? - / * ?
, # # (E[$ > $ & #'
D #"? ? / 6# >
* " $ / ' ### -- 452
45F . ? *$ # >' $
*$ $ &?#'$ >< $& , &
G '+/ / ' $?
$ >- # / * 6# >< $
$ 'G +$># * '* + ?
' * # G? $ /
? G #+ & (" # ?
$

-# # $

$# &$'$ # - /(
$ /# <
, $ # 0 '$
+$# -# # '$ #
- '$, # "#
#+$ #R
$ / # &$ 5
$ K$ 5E
I /; # - / $& $ V JL
& $#+ ? / $ * $L
$&# U $ " $ / K$ & &#
 / & $ &$'$ #$
/ 0 / /$ -$ $
, $ $,
#& ? + < 8$ $ $
$+$ $ # $
$ # / / $ '$
/ V Y& > $ / #&
&$-'&&#

D15?5&-5F A'E A'?' @52D4&?ℕ(41 ?4E5 -4H5&' 46 A51 62$4*1(2FE4&'?A5F' A'E -4 +521 A'E?5 6 'H5 2 -1*5 H&'GA-(2&F ?A4@ -A5 ?-15&G-A 46 A'?' D2??'4&' +C A'?' $2 '2&-' F55F? 9 A2-' H&'GA-' ?4 :12$5&(-A5&(K 5J: 2'E?' -A5 : ''$2 14*?' 5&5-'2&(-A2-' A5 @4* F &4-' A2$5 +55&' E415 -A2&' 2 E2-:A 641 -A5 ?-4*-5?-' 2F$51?21Cℕ 41 @A4 @4* F &4-' ?44&51 A2$5 4?-' A'?' '65 2 -A4*?2&F -'E5?(-A2&' 15-*1&' F'?A4&4*15F -4 -A5 2FC 46 A'?' 4$5ℙ &' -1*-A(K A5 :4&: *F5?(R -A'?' :4&M*5?-' E2C +5 ?2'F -4 A2$5 +55&' 2:A'5$5F +C 4$5 12-A51 -A2&' +C 21E?K6

I '# / #& ? J# L
& *' $ $/>= ' ' G# ?'
&$'$# G? ?$/' -$ /' ? #'
- #+ $'$'$?# "' *', # '$'#+L
- $#' & #>'#'?#' /$>'$'
#' G$' $* G$ /' "$ / /' 0>'
?'"$ $ 'D #"?' *' $ $ &?$'
U' +0 ' ' -$ $ '
' ? ' /' $/', '' #='
/ '$ $& '$, ' '
$+ $/ 'B', '-$ ' /' $
+# $/'/'$ /$/'*# "#', '$+$'
- ' '#'>'*$' & '$ $" $
/$+$'>'"$ $'& +', # '
'*# $'>' $'& $', ' '
* & '/' $ '-$ $ # +- '>'
$+ '#', ' '/'- $ =
-#/ R ; # & $" $ ' ' $'
P', # &'2' /#$'F3
':#$""# '* 'F)'2@B4
/ $ $'$"# 'G? '#ℍ
$>'?$'0 ' *' &?'*, '
* &'#' ? '-$" 'G$'$
0 ': #$ '0 '#'2(34'
6 '0&$+' ' >' $ >' /# # L
" # ? /'#'?#' & #'$ /'&$-#L
$'* '?#' &? $?#-' - #&$'
$ '$ /' , & '*G?#&?'
?'?$' *' - &#+ ' - &#$ >'
#' $ #'' '#' ?'?#"? ' L

- ' '?#'/$>'G# ?'?#'& L
>+ ' 6 'G$' '? G ' '
J& #' >' / ' /' ' '
0 ' G$' +- > /' #' ' $'
* #" '+# # '0>' ?' - 0#&'
'G$' '?#'#'#'' -$# '$'
+# # ' ' ?$ ' :' '$*L
'?$'+ $ &?ℂ'$&& # '?$'
?'G '?#' $' ‹ $ /' ?'
*# /' ?' $+' **#&'$' ?'& '
*' $ &#' 'G? '?'/# /'$' ?'
- +$ '$" ' *' * >= #J' #'
2@F5' # $0 &?#' $ ## $
$ #$ $' +' '##' -$ '###' -
'FF3‹ /'2)3@.' 6#'/ $?'G$'
#' $ >' $+ /'0>'?'" /'
$ /' ?' $ /' *'?#' #+ '$ /'
#'& ++ + $ /'0>'?#'* # /'
$ /# $' +0 '#' G '
0 $?# "' $ ' ? ' #0# # >' *'
?$' / '$ /' "$ ' - '
#+ ' '2E5 22E .' $'$L
"# '0 & + ' & & /' G# ?'
$ ##$' # $ '0>' ?'&# L
& + $ &' *' &$ ℂ' * # "'
'?#' "" # '?'# '$# '
1?' ' && * >' +$/'#' ?'
* + ' *' ?' $# $' ' '
0 $ '* 'F E /'2@(4

S ;

A5 D2&'21F @2? 2 RH&'GA-.5112&- '& '-? '-512 ?5&?5(9 14$'&G 4$51 ?52? 4& @A':A &4 +21H A2F 5$51 $5&-*15F(2E4&G '?2&F? 2&F :4&-'&5&-? @A515 &4 :'$' 'L5F E2& A2F 5$51 -14FF5&(2&F @A':A62&:C D54D 5F @'-A 2 -A5 E21$5 ? 2&F F1521 5&:A2&-B E5&-? 46 14E2&:5N :4*1-'&G F2&G51 '& 5$51C 641E(:4E+2-'&G 5$51C@A515(2&F 5$51C@A515 $':-41'4*?

A5 $51C 4FF? D15?5&-5F +C -A5 F565&:5 5?? &2-'$5? 2E4&G @A4E A5 @2? :2?-(R 2 -A4*?2&F 46 @A4E(K -4 M*4-5 -A5 @41F? 46 4 *E+*?(R @515 &4- 5M*2 -4 -A155 D2&'21F?(K @2? '& '-?5 6 -CD':2 46 A'? D14B 65??'4&N6 2&F -A5 +1' '2&- F5?-'&'5? -4 @A':A -A5 E52&5?- 2F$5&-*151 @2? 46-5& :2 5F(&4@ :21$'&G 4*- @'-A A'? G44F ?@41F ?4E5 I 412F4K E415 ?D 5&F'F -A2& 62&:C A2F F152E5F 46(2&F &4@ 4$51B -*1&'&G ?4E5 4 F +21+21':FC&2?-C(@515 6* 2? 5JB -1241F'&21C 2? -A5 @' F5?- :A'E512U @A':A 1'4?-4 5$51 ?2&G(41 51$2&-5? ?2-'1'L5F

'? :4*&-1CE5& @A4 15E2'&5F 2- A4E5(655F'&G

$ / ' / ' "$ ' $* ' X U ' / V $> ' ? ' /L
+ $ # "' '$ # '&$'$ # ' *' +# $ ' U' / ' # " ' # " # ' '
?# ' $&, $# $ & 'G? '?$/'! L $ '$ +$ '>'+ >'& 0$ / ', '
> /' '/# $ '&#+ '# ', ' +# ' '$" $/$ #$ ' '%V' #L
*' $/' ' $ /' ? $0 ' + ':#$" ' / ' .' 7 ?$ '
* $ ' *'$ + '& # ' ' #' & /' ? '0$ /' *'&?#'$ >' $>'
/ &#' / ' '# $ $ ' , ' +
& ' #+ '/ ' 0 ' * ' 00 $' , '&?C$' #+ ' '
- ' ' > ' $ '/'*$& ' /# / '$0 "
$ +$ ' & ', $, # ' 0 ' ' #+$' $'#' ?$' 'C$ + '
, ', # # '*$& $'& ' ' ' $
- ' $ '"$ $ '? $'-$ $' # ; '&? '/ '$#$' +$ ='
M'*$+$'/ ''$# '>' * K$/ ' / $'$ C$ '& -
0 '-$ $' #! /$ " =' ' + '/ C$" ' #+#
/ ' $ # $V' $ ':$ ' #' - R
'2) $ / ' ## '&$ '2F

G155F' C 4& -A5 15D41-? 046 A'? 2F$5&-*15?('$5F 2 E4?- 5M*2 C '& 2& 2-E4?DA515 46 14E2&:5 ?D'1'- 46 :A'$2 14*? 5&-A*?'2?E D5&5-12-5F -A5 $51C F5D-A? 46 -A5 &2-'4&(?@5 '&G -A5 A*E+ 5?- '&F'B $'F*2 @'-A 46-C 2?D'12-'4&? 2&F 2 D14*F :4&?:'4*?B &5?? 46 -A5 F'G&'-C 46 A'? &2-*15 R A5 D1'&:5 C F'?D4?'-'4& 46 -A5 D2&'21F?(K ?2C? 2 6415'G&51 46 -A5 -'E5(R F5 'GA-5-A E5 E*:A(2? @5 2? -A5 G5&B - 5 &*1-*15 2&F &4+ 5 :4&$51?2-'4&(&4- E515 C 46 "-A4?5 46 A'GA F5G155(+*- 46 -A5 :'-'L5&(D52?2&-(2&F :4EE4& 2+4*151K9 A2- @4&F51 -A2- ?*:A ?5&-'E5&-? ?A4* F +5 64*&F '&:4ED2-'+ 5 @'-A ?4+51(E5-A4F':2 A2+'-? 46 +*?'&5??(41 -A2- -A5 &2-'4& '&B F* G'&G -A5E ?A4* F +5 ?5F*:5F 6'04E -A5 A*E+ 5 D2-A? 46F4E5?-':' '&F*?-1C -4 2 +1 '2&- 2&F +4 F51 :21551 46 2F$5&-*15 *:A :4&?5M*5&:5? +5:2E5 -44 2DD215&- '& -A5 64 4@'&G 15'G& 6 6-: & &4-':'&G -A5 :'1:*E?-2&:5? -A2- :4&?D'15F -4 641E -A5 &2-'4&2 :A212:-51('- @4* F +5 *&D21F4&U 2+ 5 -4 4E'- -A5 5?-2+ '?AE5&- 46 -A5 &M*'?'-'4&(m@A':A :4&-1'+*-5F ?4 21G5 C -4 :4*&-51+2 2&:5 -A5 +5&56' ? 15?* -'&G 614E ?2+5 20? G4$51&E5&-N 2&

] $ # $ + =
$0# '* '4E
c R D2G&4 '(K ?2C? -A5 5&5-'2& E'&'?-51(R &4& ?4 4 '& M*5?-4 D25?5 F 12&2-2(E2 '&-*--4 < 15?-4 F5 2 D2G&2 E5. F5?' E2E5&-5(&4& ?4&4 E4 -4 '&F*?-1'4?'(&5 D'2&-2&4(&5 2. 412&4 $4 4&-'51 2 -5112N E2 ?5 F2&&4 2F 2 -14(5 D'F $4 4&8 -'51 $2'E4 2 '2 G*5112(4 2 5

/# '$/'$&, # $ # *$& $'&? ' - '$''# V' :#$""# '* 'F@ .' #+ # ' ' ? ' $+ '- - ' ?#&D '$' ? ' $+' *'?# >' / & / ' ' ' $'& & /' O>' $-+$ >' + '/' $ & L $' + '###' - - '4@3' ' , .' G? '& $# >'&$ '0'&?$ " /' G# ?' +# # # "' ' ? ''$ # >' *'?#'& >+

S=

'&?-'-*-'4& @A':A A2? F4&5 E415 -A2& 2&C 4-A51 -4 ?-2C -A5 D14*F E21:A 46 A*E2& 152?4& @A':A(+C 'ED4?'&G *&'641E'-C 46 :155F(A2? D14$5F -A5 61*'-B 6* D215&- 46 ACD4:1'?C 2&F ?*D51?-'-'4& @A':A A2? ?4*15F -A5 ?@55- :A21'-'5? 46 A*E2& '65(9 2&F(?5-B - '&G 'H5 2 64* E'?- 4& -A5 G44F C D14E'?5 46 -A5 2&F(: 4?5F *D -A5 62'1 +*F? 46 ?:'5&:5 2&F :'$' 'L2B -'4& 515 -A5C @515 6* C 4D5&5F 2? -A2- ?*:A 2 + 'GA- ?A4* F A2$5 62 5& 4& ?4 G2 2&- 2&F G5&514*? 2 D54D 5 A2- '- ?A4* F A2$5 +55& +14*GA- 4& '- -44 +C 4&5 46 ?*:A *&+ 5E'?A5F D2-1'4-'?E 2&F D*1'-C 46 E4-'$5 2? ?2+5 2 4@ E*?- A51 $'1-*4*? ?D'1'-('6 '- +5 D51E'--5F -A5 F5D21-5F G44F -4 44H F4@& 4& -A5 ?:5&5 46 -A5'1 521-A C 2+4*1?(E4*1& 4$51 -A5 E'?51C 2&F E412 F5G12F2-'4& 5&-2' 5F 4& A51 :4*&-1C +C -A'? 4&5 2:-P 4 -1*5 '? '-(-A2- -A5 EU?*15? 46 -A'? G152- M*55& A2$5 A2F 2 D51E2&5&-('&6 *5&:5(@A5-A51 641 G44F 41 641 5$' (4& -A5 F5?-'B &'5? 46 A51 :4*&-1C

]' + $>' $& ' # ' #+ + L # " $ '+ ' *'$ '# ' ? ' #"? ' /#$ ' # * & ' # ' ? ' G # # " ' / -$ + ' *- >'$ /'*#& # ' *'$' + $ ' #D ' ? ' $ ' *' ' G?#&?' +' $ $ >'/ ' /' ' $ $&# ' $ $ >' $ '# ' G /' - - ' *'- $ ' ' '&$ ' + ' *' $ ' $ + #$0 ' ? + $ ' #+$ $ ' ? '* ' # * & ' *' ? ' /# - # # <' 0 ' G? ' & + - $L , # # # ' # ' - ' # "' + $ ' & >' + $ D ' % ' ? >' /#L ' $ /' # * # "' ? ' / $/ >' $ /' $ /' $0 $.' #"? /' -' ' + ' *' + # $? ->' # ' ? ' ?I ' *# ' * ' ? ' ? #& ' # ' ? $ ' G? ' ?$ ' ' - + /' ? ' G?#&?' G# ?' " /' $ ' ? >' G D ' *' ? " $ ' $ # #$ '- ' ?$' ' 0 ' $ /' ?$ ' & # *' 0/ - ' / ' : "$ ' &# $ ' $0 ' ' ' 0 + ' ' "' $ ' $' ' *' $ ' $ / 'G? ' #- ' +' ' ? +' + $# %C' > ' $ =' ?$' ' 0 ' &? /'G# ?'*# '*# +' #& ' '&$- ' '## .' '0 & + ' ? ' ' >' $ $ ' *' ?# ' $&& /' + ' - & - #0 ' # ' ? ' # $L #0 $ ' *' $ ' #+ ' $ /'G?$ ' #

A5 'E E5F'2-5 '&,*1C '&6 ':-5F 4& -A5 &2-'4& +C -A5 ?D'1'- 46 +'G4-1C0 '& -A5 15'G& 46 51F'&2&F 2&F ?2+5 2(2 -A4*GA G152- C 5J2GG512-5F(9 @2? F4*+-B 5?? ?51'4*? 5&4*GA ! &F51 -A5 4-A51@'?5 +5&56'B :5&- 4D512-'4& 46 -A5'1 G4$51&E5&-(A4@5$51(-A5 A52 -A6* 2&F 5JD2&?'$5 5&51G'5? 46 -A5 ?-2-5 @515 ?*66':'5&- -4 A52 *D -A5?5 2&F F55D51 @4*&F?(2&F m?-' :2' C '- 4&@21F '&.' -A5 :21551 46 D14?D51'-C

1 ? $ & $ > *' ? /#** # '" ?# $+ ' ' $, # # ?$ +$/ '$ $0 $ " $ - # /' *' #+ 0 +L & + - $ # *' ? +0 *' 0 $&# '" $? #0 $? # '#& #+ && /# '" ?#+ J# # '" # ? & > $ 24 EEE2 G - 0 #& >0 /'0> + $0 * 2B(.' F =' ? ' $ #0 $ *' $ # $ / K $?$ *#' = #J ? $ /' $" $ /' 252 (24 *L P G #/ /' # ? D# "L * /' ? - # ?+ 0 L / +' *' $ # > $ =' G 2(32 ? /$ *' ? #& &$-' &J .' #& ? G ' ?$ $ #" /' $, $ & + + & + *' ? + / +' $+ *' '#& #+ $&? *' ? # # # $ /'2 @23' 6 # / *#' #0 $ *' $" G# ?' , # # # + '#' &?$- 'J '# .' ? *' #0 $ *' $" G# ?' $-- $?$' '& + ? ? $--$ # '" 0>'$' > ? ? *' ? # D# "/ +' JL - $ #0 - & *' &$& $ # & - # '" >' '# $ /'G# ? $ >' / #" ' J$"L '+#"? $ $0 >' /# + " $ < ' ? ?# /$ $ ($0 * +' ? '*$&#L $ J& /# " >' #+ - * & $ /' # >' G# ?' G?#&?' ? & #' ? ? ? ?$?#+ *' $ '# # & L + #+ - 0$0 #+$ # ? #/ $0 > / & /' # ? ?# '* ?' ? +$ $ * J$+ - ' ' + ? #"# $ #+$? +0 0$ # ? /' P G ' # ? *# /" /" / * / &# '" ? +' # * ? G?#&?' ? - $ 3EE EEE 6 # l 6 , $ #$ $ * ? *$& ?$ FEEE ** /' +$ > L / +' $ '# # 2(32 $ /' / # , # # # + '#' - FB2 .' +$D ?# ? 0$ #' *' ?# &$ L ?$' ? G * +' & + - L & $ # * ? ? ? #0 $ $ > & ?$?# +0 /#/ - 0$0 >' J& /'2BE EEE *' ? 0 >' * +' ? $+ $ $ +$ > L $' + 2) E EEE $ P / +' $ '# # 2(32 $ /' &?$- 'J '## .' / / ? ?'&$ L +$D ?# ? 0$ #' *' ?# &$ L # 9 # $ 0 G# '" - 0$L & $ # * ? ? ? #0 $ 0 >' * +' ? $+ $ $? # # *' ? D# "/ +' $ # '$ =' &# ? ? $ +0 $ + - $ > ? ? ?$ /' + ' * 5 . $ #$ $ G? $?$ U'# ? ?'& *' ' G ' + &? *'?# $ $ #' " ' * (? > 0 /' $ >' G FEEE ? #& ? ?# #$ '& ' =

S 1

'-A -A'? 'ED* ?5('&F55F(-A5 &2-'4& :4&-'&*5F -4 2F$2&:5 A'GA51 2&F A'GA51('& ?D'-5 46 -A5 ?C?-5E 46 2 E4?- *&12'&G 5F 5$' D*1?*5F '& -A5 64 4@'&G 15'G&? A5 G 41'5? 46 -A'? 2-51 D51'4F(46 -A5 2G5 46 A21 5? -A5 '6-A(2? '- '? :2 5F(E*?- 6'&F -A5'1 -1*5 ?4*1:5 '& -A5 E52?*15? 46 A'? ' *?-1'4*? D15F5:5??41? -@2? '& -A5'1 :4*1- -A2- 4?:2&(21:' 2??4(5&F4L2(2&F -A5 4-A51 E2?-51.?D'1'-? @515 -12'&5F(@A4 E4* F5F 2?-' '2& '-512-*15 '&-4 -A5 &5@ 2&F E415 : 2??':2 641E? 46 2-51 -'E5? 9

" $ # G /$-- $? 2)E EEE # /#'#/ $ # *$+#L # $? G? # / +0 $ 3EE EEE 6# / -$/$ +##0 JJ'# &$- # . & G# ?? G ? $+ # * ? 0>? ?$ *? # ?J# $ /0>+#L " $? G 7 / G?$ $? # >_. F EEE EEE< $ / " # G# ?? ? - & & + - ?$?# +$>*$# L >#* 3 EEE EEE # ?$L 0# $ -$# $? - /$># 0#/ 0# - $. ? ? +# &?# *#+- / ? ? $L ? #& ' #" " # & $ L # "# $ *$ # ?+ #&$ - L " # G# ?? ? / $ # *? + $ &?> ?# "# #D# "# ? #+$"# $ # $ + #&$ #L +$!? >? - D ' + # 1? + ' $'# "$ G /* - #-? $ # $ /$ " + < L ?# "# # /#**#& * +G# ?? J$& ' ' - 0$0# # >? G? ? >? $ $ $ $ $ >? - # /X$ $ / ## "+ &$ L >? & #' / $ /& *#/ >? &# & $ / ? + $ L + * ? P G# ?? J# $ /? 0$ * ? L # ?$? 0 ?$' 0 - $ /G# ? ? ? #"? , $#*#&$ # * /# L 0>+ + / +?# #$ $ /$' I ? ? G & # "&?$- *$ $ # * 6# >? ?$' #& /? - " * # ? ?# #" . ? $ G?#&?/# L - $> /? $ #, & # "$ / >$ # $ &?$ $& #L #& * $ # #$ - > ? G +$ >&# & + $ & G?#&?- $ /$?# - # / G D$ #+- $ ' # $ /0! & ? - >* ? # L $ $* #" # * & ? $ #$ $* ? "? # & # & ? $" * ? ? (&?$/$"$# '#' / $ /- /* ? &? $'# ?# "$ #& $ $ +$/ ? ? + ' ? $ /$ /* # ' #>& + * - -$# # -$ #& L $ G$ - ? # * & 6 $ " $" ?$/$ $ # #+$

: 7 6 G

5 @2? *&F51 4&?2 $4 UF5 41F4$2(-A2- 5C$2(5?:212(2&F -A5 4-A51 G152- :2D-2'&? @'-A -A5'1 '&. $'&:'+ 5 5G'4&? @515 641E5F(@A4 5&2+ 5F A21 5? -A5 '6-A -4 F':-2-5 2@? -4 *14D5 64 A2 6 2 :5&B -*1C N 2&F '- @2? 4 * E + *?(@A4 &4-4& C 5F -A5 @2C(+ *- 2&'E2-5F -A5 D2&'?A &2$'G2-41 @'-A -A5 ?D'1'- 46 F'?:4$51C :21:5 C @2? 51F'&2&F0? 15'G& +14*GA- -4 2 : 4?5(+5641 5 2G5 2& :4ED 5-5F @A2- -A2- E4&21:A A2F D14,5:-5F(-A5 :'1:*E&2$'G2-'4& 46 -A5 ?4*-A51& :4&-'&5&-N -A5 $':-41'4*? +2&&51? 46 41-5? A2F 2 152FC D5&5-12-5F '&-4 -A5 G4 F5& 152 E?

$**# # > G# ? ? $ #$? # + - ' / $ $ / & * ? - # / / $ /# #" / > * * #" + / $ > -$ L #$ / $ G ?$' ? G $0 $/ - * & ? + ' # ? &? * # /$ + * ? - # &#-$ &?$# # ? -$ L # ? #' # # $ > ? $&, # # # * $- ? ? $ / * $ K $ / * $? * D# / / -# # - / $ 0'#L & + + #&$ # G# ? ? # $ * ?$ & > 7 # ? ? $ # ? - -$ / # G$ /#**#& * $ " # #D ?$ * &$ -- / 0> ? / $ / 0- # ? / 8$ &#= $ $ / 0> / K$ G? -# # '* / # *# '#+$" *-$ $ $, # # > $ / $ & + + / ? + *# # ? / * + * $ #$ ' #*#&$ # ? # & > + ? - G $ '0 + # $0 $ #" ? # *# ? + ? - # &#-$ + $ * ** & # " ?# # $ > ' # # " $ > "? G$ $ $ $ G ? & + - #L # # ? $ # #$ - ' ? $ & / &> G?#&? ?# /#$ & ?$/ $ $/> 0 $# / $? $ " $" * # $? L & / 8$ &# $ / $ $:"$ G$? * /# # " # ? / $ +$ $ / /#- +$ # * ?$ $+ * #& / # ' 6# >< $ / / KG $ > " * ? $+#$0 * /# $? " ' * 8 $ $/$ G? + ? +0 / # ?# " 0 ?# " # ? ? / 8$ &# $ $ / /# $?$/ - / ? # ' #" $ $? -$-$ & G? ? > / 0 0 &$+ # & / G# ? ?$ # ? * ? ? $ #$ G?#&? - / & / &? # ? / / &$ # * ? # &?# / ? G ' # - = $ / *$ 0 G ? - *#&#$ * * *' #*#&$ # # $ / ? $ # #$ - # , # ? / G# ? ?# $ / $ (? ? + > 0 ? $ L * ? + * ? / + #+ #* ? /G ? + # G$

SS

46 4&-5L*E2 2&F 'L2114(2 $51C 65@ C521? 2-51(64 4@'&G *D -A5 52F 46 2 +42(5E+21H5F 4& -A5 5&-51D1'?5 @A':A 5&F5F '& -A5 F4@&62 46 -A5 ?D 5&B F'F FC&2?-C 46 -A5 &:2?

A*?' '-' '?(-A2-' -A5 ?55F ?4@&' *&F51 2 G44F ?C?B -5E :4&-'&*5?' -4 C'5 F 61*'-' '&' 2 +2F 4&5 A5 ?52?4&' 46 -A5 E4?-' +1' '2&-' 15?* -?(A4@5$51('?' &4-' 2 @2C?' -A2-' 46 -A5 G152-5?-' &2-'4&2 D14?D51'-C A5 ?D 5&F4*1?' 46 6415'G&' :4&M*5?-' '& -A5 +42?-5F 15'G&' 46 A21 5?' -A5 '6-A @515 F521 C D*1:A2?5F +C -A5 F5: '&5 46 '&F*?-1C 2-' A4E5(2&F -A5 4??' 46

G# ?' $ ' $# ' *' /# /' "$ &' * $ ' ' $ /' - &# # ' ' >' + '* +' " +>

?' #& #+- #&# >' $ /' * ?L 6 G *$ ' ?' - #& # $ ' ' *' ? ' +$ #& +# >' *' $ # ' G$ ' 0 *# /' 0>' ?' *' ?' $ -# /' ' + ' 0 / ' &?$ " ' ?$ ' 0 ' +$ ' *' "' ? + 0' # ' G$ ' $ >' "" /' $ /' ?' 0 G ' ?' 0>' ?' # # "' $ /' -$ # #& L & # #& ' *' ?' & >' # ' G?#&?' & # ' *' ?# ' $ # C' ?# L ' ?$ ' ' # ' ' ' ?' $/ I' >' ? ' $ ' $ /' ?' ?' ' # ' ? G ' ' G$ ' / ' " $& ' *' $ - #+# #' ' $" ' ?' " G ?' *' &# & + $ & ' "$' ' G$>' ' - # ' *# + ' $ /' G$ ' #+ + /#$ >' ** & /' $ /' /' "$ & <' +$ >' 0>' # /#'#/ $ ' 0 "# "' ' ?' - - $ ' 0 +# ? ' G ' * /' $" ' *' /# $ /' $ /' $0 $' / G ' $' - ' $ /' 0 ' $ /L ' &?' ' ?$/' #"# $ >' - L $ /' G$ ' $ $# /' 0 ' ?' $L - /' ' / ' ' $' -$ $ ' &?$-L # $' &?$ $& # #& ' G ' *L ' ' # ' # ' $ # <' 0 ' ' *$& /' <' 0 $ >' G$ ' ' >G? ' ?$' ' 0 / /' * +' # ' 0>' 0 ' # ' G$ ' ?' 0 $ >' *' $ ' ?' J- & /' " ?' ' G?#&?' ' *' $ ' ' ?' &?$ " ' # L ?' G D' ?$ ' $ $/>' J / /' & - / /' G# ?' ?' J $' $/' G ' $ ' 0>' ?' & #/ $ # ' &# & + $ & ' *' ?' $ # ' $ /' ' $' $ ' '# G ' ?$ ' ? ' L # ' $ # # ' * +' $ ' # $ /' ' ? "?' - -$ /' / ' $' - & /# "' #" ' - - >' *$ ' - # # ' ' $' & + - ' -$ ' *' / ' ? ' ' ?# #>' *' ? ' " $ ' - $ ' & + + L ?$ ' : ' $' ?# >' G?#&?' G $?' G?#&?' 0! & /' # ' ' # ' +$# ' ' 0 ' G # ' ? ' # * & ' $ /' - # &#- ' ' G? ' G# ' $ + - ' $' *' $ ' $ /' 0# $ /' ' $' ' ' ? ' / # $ # ' *' L & $# ' J ' ? ' - & #$ 0 '_

: 7 6 S

'+51-C A5 D2-1'4- @' ?55 '-- 5 -4 :A551 A'E '& -A'? R G4 F5& 2G5K 46 -A5 &2-'4&2 A'?-41C(@A4?5 4*-B @21F ? '4@ 46 G 41C @' ?55E -4 A'? D5&5-12-'&G 5C5 4& C -A5 A5:-':+1' '2&:C 46 F5:2C 5 @' -*1& -4 2& 521 '51 D51'4F(@A5& -A5 &2-'4&(5E51G'&G 614E -A5 ? 4-A 2&F ':5&?5 46 2 +21+214*? 2G5(?55E5F -4 15&5@ '-? 2&:'5&- 5&51G'5?(2&F -4 D15D215 'H5 2 G'2&- -4 1*& '-? :4*1?5N 2&F G 2&:'&G 4$51 -A5 4&G '&-51$2 ?'&:5 5 2D?5F(F*1'&G -A5 6'1?- A2 6 46 @A':A -A5 &2B -'4& @2?-5F '-?5 6 4& ?:A5E5? 46 E2F 2E+'-'4&(2&F '& -A5 2--51 A2? ?*&H '&-4 2 ?-2-5 46 D212 C-':-41D41(A5 @' 6'J A'? 5C5 4& -A5 15'G& 46 51F'&2&F 2&F ?2+5 2(2? -A5 E4?- G 41'4*? 5D4:A '& -A5 2&&2 ? 46 A'? :4*&-1C

Z

;

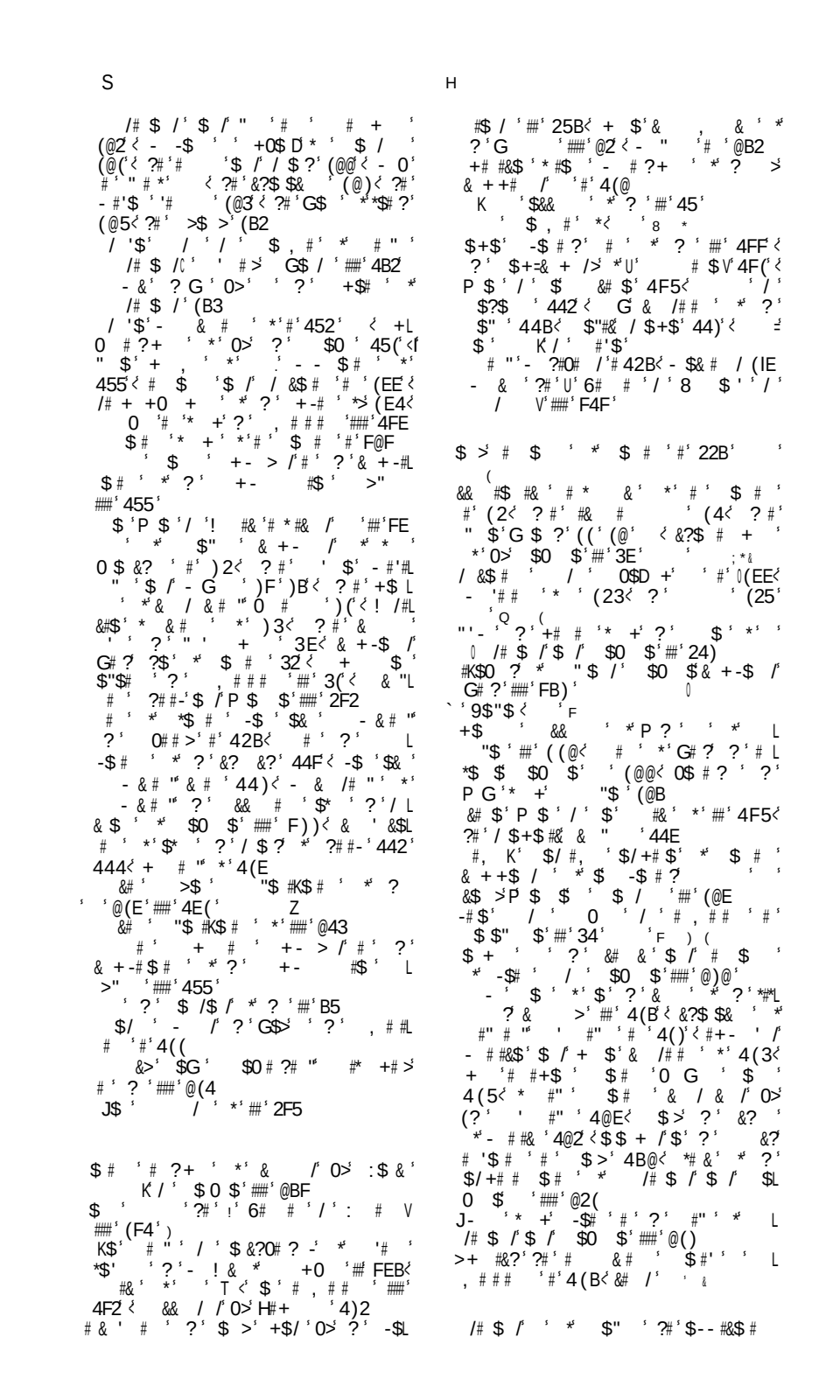
Z

Z

Z

S

H



Z

/#& * ? J- # * ? P G FF(F4 .< '# # $" F(2< # '# +0 $ & $ F(B< ? # & - # * ?# + F@2< # # ' # L '# G G# ? ?# + F@F< +$D ' -$ $L # * ?# & /' >$" F@3 FB@< ? # J # N ? & ' # * ? $ # ' F@) < ? # ' # & # - & # " ? + F@3 < ? # ' $- - #&$L # ? & * + F@5 < ? # G$ > /# - +$& # " $ $+0$ L $/ # 0 FB(< # * +P ? ?$ +0 ?$ $# /' ?# & /' >$" FBB< $/! + * ? # =/# & > G# ? P ? 0 ? $ > * / # $ FB3 < - $ # * ? # $/ +# # $ # ? # L & $ # $ >$ /' &# #&&?$ $&L * ? $ # F) 2 < ? # # " $ - &? - # 4EE < $ # $ -# # * ? # $ * ?# - &? 4E2 < ? # $ > G# ? ?$: 4B4 < ? # * & * / ? +' 0 ? - - 4) < ? # *$+# > ((F< ? # +- $ G$> # "$ / ? & ' # * ? @22 < /# - $ / &&$ # * ? 0$>&# @F(< ? # /#& $"$# ? # @@2 < / & +- $# $"$# +0 ### 24< ? # & - # +0 G? ? + 0 0$ /# $ F2 < '# /#&$ # * ? + F4 < ? # $ +0 4E< +$D &$ * - '# # * ? & L # 44< #0 $ " $ 4 (< ? # # / - / $ # / # " $ / ? - - (E< -# # * ? & #$ L "# $ # / < $ $ + / 0 ? &? & , # $ > ### BF < ? # + $ & ? - - #&# ?# #- $ / P $ $ '# # -$# 225 2F2< #K / G# ? * F4) < ? # 0 #$ =- $& F@E < +$ 0 +$ + & / ' ? # +$# 0 ?$: (B5< ? # &?$ $& & $ / ()5 < " $ '# G * ? $/ +# # $ # * @2 (< ? # - #& # ? # $&& # @2@ < ? # / - # * ? 0 < $# + * ? +L 0 $ # ** #& * ? ?# "? @2B < $ * # & + + L / @F4 < ? - + "$ # * ; ? > $ /# $ & 0 > BF) @F3 < $/ '$ & + * " $ # ' / @F3 < "$ & + -# $ # @4B< "$ #K$ # * & &# @43 < "$ - * # $/ '$ & / 0 > @(E < &?$ $&L * ? $G @(2 < - # &#L - * ? # "# $ # @(((< & +# &$ - #& / @ @F # $ #+L - ' + / @@(< ? # ' " ' + * $- < ? # ' * + ? / # @@5 @B3 < -# # * $/ ' # ' # ? # ? # #" @B2 < - " ' * /# & ' > < ? # ? # & #$ $/ +# # $ # @BB < " L $ - - # > / @) @ < &?# '$ -# # * ? - - / @34 < ? # #" ? - # / * $ # $ " > @33 (5($ / 2 ' & # : # & ? # + # $& ? # & ' # * # P G '# 4@(/$ # # # / &$> *' ## 4(B #/$ /# & ' / ### @BF #J 8$ / D / + $ / 0 ? * ? ; * $" & +L +$ / * # &? $ +> # $ > ### (2(? # / $? ' (2B< ? # &?$ $&L (2) < ** & * ? # / $? ? &? $ +> ' (25 #J P $ / ? /$ "? * +$ # / /# $ / ### F3B &$ # / ? ? $ +# # ? $?$: ## 4) 5< ? # 0 / & L / & 43E < ? # ? # # > +0 ### 22 < - # * $' @B@ #" & $" / # -$# ### @@($ & $ # 0 G $ / $" # 2@B F42 < '# # / 0 -? * L "$ F) 3 < +$D - $& ' G# ? $ # F32 < - *' G# ? -$# ### 5E < ? & ' $ > ' 2) 4 < ** & * ? * ? 8$ " #$ F22 < $ > G# ? ' F3B< # ' # + - #& > F33 ($ / z) (T / #& * #$?# $ + * ? P G ## ' F43 / #& 22 * $- && * L /# $ / ## ' (F(< ?# '$& < ?# & - # * 8 $ ' (4F < # $ / 0 # ' H ### B(< ?# ' $- - #&$ # * $#/ B@ < ?# '$ +- '$ *=/ * &)) < ?# * *$) 3 < +$ D - & # ?# +) 5 2B(< + 7#$ * $ & ' 0 L G $ & ' $ / -$# 2B4 &? $ +> < Q) &? &? #& #& * ' ### F4F $ $ $0 $ - $+0 - & # " ### F(2 FB2 d < $G - &/ " @(@ 8 8$ $ 8 $ ' (+ ' + $"$# ### 2(F 2((< # * 0 # ' H 2)B 232 < 8 $ ' - / 0 * 232 < ? &? $ ' FE(FE3 < &$-# $ # * ' F2E< ? ' -$ #$ / &L & -> F2@ 8$ / 0 * K ## 242 < & $ / * ? # +0 24B

;

H

8$ #" #$ ' $ +# ' $' ? ' ###' 2B5' ?' b
&?' &$+-' ? ' 234' 0 /'
-$ $" ' * ?'0 #/" ' *' 23)' /#
* ?' -$ # ? $ +' ' ?' 252' *
?' &?' $ +' ? ' 25@' & /'
0' ?' -$ #$ / ' FE4' ' * ## '
FE)' ' # ** & ' ' $ & ' F24
8 0$ *$ '##' 5 (' / ' *' 22B
8 ' /# & +*# ' * $'$ ' # ' ?'
$ /' *' ###' 433' &$ ' * ?' /# $ '
' '
8 $ "' * /# $ /' $ /' $0 $' #'
2EB
8 $' #'# " ' ?' $" $' 0$ $' *
$" '#')
8 +$# ' ?' - # & ' +$ # /' ' /#L
$ /' ### ' F3B' F5F' *$& ' - &*# "'
F3)' ? '& ' G$ /' 8 $ ' '
4BB' / #' /' *' $' (@F' /#L
$ /0' 0 , ' (BB' ? ' 0 , '
+$ #$" ' dB'
8#$ ' ?$ 0' " ' & / &' '
?' ? # ' *' ###' @@3'
8# '# ' $ ' +$ D' ' ##' (F@' ' ?#'
#* ' *8 $ ' /' / '$' ###' F42'
8# $' ; ' P $' D' * "' ? '
* +' ?' $ $ $ '#' 2@(' ? ' D' *
$# '& + - /' '$0$ / ' ?' # " '
*' 2BF
8# ' / ' - - # # '* ' ?' +$ #$" '
*' G# ? $0 $' #' 235 252' ?# ' &?$L
$& ' 252' ?# ' / $ #' 25F
8# ' / ' / ' -- ' >$' **#& '
###' (5(
8 /' #' ?' 7 ' /# ' ###' () ' @@5
8 + K' /' $ ' '$ ' #& ' *' $ /'
*' ?# 'G D' ##' @EE' ' ?# ' #0 ' '
$ 0$!$ ' ###' @24'
8 $ ' ' + &' 8 (+ ' &
8 / ' H#+ ' *' $ $" $' /#L
$ /0' +$ >' J & # ' *' #' F45
8 ? ' ' \ (; (
8 $?$+ ' ' +$ D' ' ?# ' 6# >'
###' ((
8 $# ' &$ &# >' *' ##' 2F3'
8 $ $' -$ # ? +# # ' $' ?' & ' *'
$ # ' # & # ' # ' $ # ' ' ?'
-$ # # ' * $- ' ###' BB
8 $ $/$' ?' D# "/ +' *' #' ?' +#// ' *'
?' *# ?& >' #' F' / & #- # '
*' (E@' >+ "# ' * ?' G /' (EB'
' $" #& ' $ /' & ++ & ' *' (E)' '
& ' *' ?' & G ' *' (E3' JL
' &?$ $& ' *' ?' - - ' *' (2E'
? ' && * ' # $ & ' $"$# ' ?'
?# #$ ' (2(' ? ' G$' *' (4@' $L
0 $' + $ ' * ' &$ >#' ' ?'
G$' *' (@B' && * ' $ +- ' '
!$' # ' (' ' # ' # ' 2F' + $L
' * ' &$ >#' ' ?' G$' # ' # '
2(34' 25' J- /# # ' ' ?' J$, #$
FF' 0$ ' *' & $' $ /' &$- ' *'
0/$ $?' (2' " $' - #&' *' ?' G$'
*' (B' * ? ' - -$ $ # ' * ' ?'
G$' G# ?' (5' @@' & + - # # ' *' ?'
-$ # ? $ +>' BE' # ' +$" #'#& '
$-- $ $ & ' B4' ? # #$ ' & , '
)(' $? # # ' * ' ?' G$' *')@' ' '
J- /# # ' ' : K' 5E' ' $ $"$'
5(' *$ ' *' / &#/ /' 2F2' # $/' # '
2F(' 0 / ' G$' # ' 2F@' + $ '
* ' ? ' / & # ' *' K # ' 2F3' # '
/ ' 2()' && -$ # ' *' ' 9$'
"$ ' / +$# ' 2@E' /#**#& # ' *' ?'
&$+-$#" ' # ' 2@4' 0/$ $?' ++ L
/' ' / ' ?' &$-# $' *' 2B2'
/# $ /' $'$" ' 2BF' 2B4' - -$L
$ # '* ' ?' & # '" &$+-$#" ' $"$# '
2B@' - # # ' *' ?' &$-# $' *' 2B)'
' &$-# $ # ' 2) (' +# $ # ' *'
?' G$' *' 234' # ' ' 23(' + L
$' # * & ' *' ?' G$' *' 23@' # '
+# # $ >' # * & ' 23B' $? # # ' # '
$ # ' ' ?' G$' *A $ / K' 25E'
A '# "' 25F' ' ' ** & ' *' ?' G$'
*' ' -$# ' (4)' $, #' # ' *' # '
2(55' @EB' + $ ' *' & ' # '"
?' '# ' @E5' @F@' @@3' # # '" *
?' ' $' ?' - J$ $ ' @4E'
6 !$' $&D' /' @42' , !$' &$-L
/' @4F' ' ' *' ?' # $: '
+ !$' @4@' $, # # >' /' '
B()' '$ # ' *' ?' $ >' *' 0>' ?'
?# #$ ' @@3' # ' # ' G# ? $ L
' ###' @@B' &?#'$ ' -# # ' # ' ?'
G$' *' @3E
8 $ $/$' &# >' *' / & #0 /' #' (E@' +L
+ /' ' / ' ##' 2B2' # ' - #L
' 2B)' + ' & +0$ ' $ '
2B3' ' > /' 0>' /# $ /' $ /' $L
0 $' 2B5' D# +# ? 0 * ' 2) E' & L
*$" $ # ' *' ?' ? # #$ ' &$+-' 0 * '
2) 2' &# >' *' $ $ B 0 # ' $ ' 2) 4'
- - # # ' 0>' 0/$ $?' * ' ?' L
/ ' *' 2) (' # ' &$-# $ # ' '
?' & /# # ' 2) @' & ++ # ' # '
2) B' - -$ $ # '* ' && ->#" ' 2))'
** & ' *' ?' *$ ' *' ? "? ' ?# L
/ +' 232' ' ' *' ? ' 0$>&# '
@FE' & ' # ' *' $ $' @F@'
?' 0 #$ =- $& ' *' /# $ /' $ /'
$0 $' ### ' F@E' B3' - - $ # ' *'
@) B'
8 D' +$ & #- ' * # ? /' ' H#+ '
0>' ? ' - - ' ##' 45)
8 >' ? +$ ' $, #' *' ' ?#'
& = - $ # 'G# ? /# $ /' ###' (F)' ?#'
/# & ' $ /' ' ' " $ /' (44
8 $/#J' # ' ? ' / +$# ' *' ' 9$"$ ' ##'
2F3' " $ / /' 0> #/# $?> ' 242' '
9$"$' $ ' 2 (B' && -$ # ' *' 2@2'
/# $ /' - #&>' # ' "$ /' ' 2B4

8 #&&#$ /# #' +$ D' '##' (F@' &
8 # <' ?' D' *' P $ $'$**$ & /'
' ' FFF' FF4<' 0#' / $?' F44
8 # ' J- /# # '$"$# '###' (F)
8 K+$ ' #, ' / '<' 7
8 K+$ ' K /&' $ /# # " # ? /'
&? $ '##' F35'
8 K+$ ' ? # '*$& # 'G# ? ?'*$+#>' *'
& ' / ' '#' FFB' F53

6

$& ' >' 0 ' -# '9$?$#$
#' (4B'<' 0 # " ' ?$+$' ((5<' JL
- /'* +'8 $ $/$'##'2F'<' ?#' -- L
' ' ?' ?# #$ '# ' ?#' J- /#L
' ' ?' J$, #$' F@'<' ?#'/ $?')F
#$ $+' 6 >' #&' *' #' 2E4' '<
?#' +$ D' ' ?' -# ' *' '
$ >'##'2@3'<' &# /' - &# '" - $'
$ ' $"$# ' ?' $? #& ' /'
#K$0 ?'###' F@3' <' 0#' &?$ $& '
*' #K$0 ?' FB5'
6 $? '0#" /'# G'# #' $ # ' ' ?
##'2@' '5 (
6 #, K' / #&' - # ?+ ' *
4FE
6 #, K' / '$#/'# #' ?' J- /# # '
$"$# ' ?$+$'#' ((2<' / $ $/'
*' /$ #$' ?#' & J# 'G# ?' ?'
J- /# # ' ' ?' J$, #$' ##' F4' F(<'
?#' &$- '44
6 >' H' *' $ # ' ?#' / '#& '* ' ?'
& ' >' *?#' $ '#'@2<' # ' *'
G# ?' $?$ # ' *' $ &$ ' 2E)<'
?#' / $?' 2E3
6 >' :' *' $ # ' ?#'$&& # '$ /'
- - $ # >' #' 2B5<' /# $- - # ' JL
- & $ # ' 2)2<' ?#' /# ' ?$0# '
2)F'<' ?#' - /#$ # ' *' $ &?' *'
$" ' '<' ?#' +$ #$" 'G# ?' P $ L
$' 2)4<' & /' 0>'*$' # ' *'
? +0 ' #"# '2)B<' ?#'# '# G G# ?'
'H ' ' ?'0$ D' *' ?' #/$ $'
2)5<' ?' & , & '23E'<' 0 '
$" ' $"$# ' 232<' ?#' 0 $&? *'
*$# ?' G# ?' ?' & * / $ '234<' / L
- /' $' ?' &# >' *' '# $' 23(<'
?$' & ' ' " #$ # '23)<' /# L
0$ /'?#'* & '233<' - '# '
- '$' ?' $& # ' *' + / ' 25(<'
$ >' *' G# ?' ?'& * / $ ' FEE<'
? $ ' $0 $' G# ?' #+- # + '
FE)<' ?#' $-- 0$ # ' *' ?' +$ #$" '
*' /# $ /' $ /' $0 $ #&# /'
F2@' F25<' -- ' ?' - # ' *'
P $ $' ' ? ' *' $0 $' FFF' F@2<'
+ ' &? $+0$ $/ ' FF4<' ?#'
'# G G# ?' $0 $' $' " '#$'
F44'<' ?#' # '$ /' / $?' F(4' F@2<'
* &' *'?#' #" ' F(@' F35
& >' : ' *' " $ /' ?#' & - #
$ /' $# + ' *' ?# #-' $ /' P L
$ $' ###' F52
6 >' - # ?+ ' *' #' 4(@ 4(3' T <
###'@4('
6 +$ /$/' ' 6 >' ? ? /' $'
$ &#$ # '# ' $ # '#'F)'<' $& * / L
$&>' 25B'<' "$ #K$ # ' *' ? ' F5E'<'
& / ' *' ? ' F5F'<' -- /' 0>' ?' L
0# # >' F54'<' + $ & $" ' ##' 2F4'<'
42F'<' $ & # /'# ' $" ' ##' 2F4'<'
> ' / ' $' ###' @4)
6 $' #' / ' #& ' *'?#+' $ /'
?#' G D '##' @)'
6# -$ # $' +# & / &' *' ?' & # '
$' ##' @'<' + # >' ? ' 2F<' -- L
' *' ?' $ #' ' 24'<' +0 '* L
0#// ' ' ' ?' ?$ 0 ' $' 42<'
- " ' *' #' + ' ? ' 4('<'
#0 $' " $ ' * ' +#" $ # ' ' '<'
- ' - ?#0# /'* +' " # '" '4@'<'
#& ' * ' -#'$ ' >$" '1 ' 4B'<'
H#+ ' / ' $ & ++# # ' ' ###'
(52<' " /' / $G' * +' @@5'<' # L
/ & # ' *' "$ =&$ ' # ' ' '
(' $ /' 0 '5 (
6 >' ? ? /'<' 7
6 >' $" ' 0 G ' P # ' ' /#L
$ /' $ /' : #& '###' (24
6 ' $G ' - & # "' ###' @()
6 -# $ ' $0 $' $#/' '0' ?' *# ' '
' &$+-' ###' FBB
6 ' *' $/ ' ###' 45
6 !$' $&D /' ##' @42
6 +0 / ' ?#' U 6# # ' / ' $' 8B " $=
-?# / ' ' $ ' # V'##' FEF'

&$ '? # +' *' ###' 233
/#$' 6 ' #"# ' *' ? ' ##' F@@
/#$' **$# ' $ /' *' $0 # ? /' ##'
F@B
/#$ '1$&& +-$ >' +0 ' ' -$#
##' F@E'<' + $ ' * ' ?' & ' # '
*' F@F' F@)'<' $&& +-$ >' +0 '
' ?#' & /' ' ' -$# '###')'<'
0#" /' '# G' # ' !M"$ /' ' 2@'<' / L
& $ /'* ' F@<' $0 $' K $' * '& L
' # '" ? +' (4<' ? # ' /#+# # '
(@' F(B' <' $0 $' &$ '* ' ? +'
@B4'#' 0 , ' $ + ' *' ? +'
/# ' &#' *' ? ' ###' @(E<' ' L
'* +' ? ' @@5
/ " & ' $ ' *' -$-$ '* ' ?'- L
& # ' *' ? ' # ? G$ '#' 2)@
*$ $/ ' D' *' ?#' > ' *' #'# '"
/ & #0 /' 0>' $'$"# '###' @25'
" # ' ?# ' U -$# ' # ' 234E V' &# /' ###'
@@E'
, # # # ' $0 # ?+ ' *' ? ' #' 4(4'
' F '5 I) (' $ /' Q '
5 I) (&

$'#+- ' + '#' -$# '###'@@(
$ & ' +$ D' '##'@@(' ###'F@)'

'# "' 7$?# " '?#' / &#- # '
(?/$ $?'##'232‹ ?#'U ? #& '
?' , '#'8 $ $/$V' 25F‹ ?#'
U'6# >' +0 V'###'@)'
$0 $' ?' " $ /=/$ "? ' P ? '
"$' ?' +$ #$"' G# ?' P ? '
' $ # '#'2F5‹ ?' / $?' ##'
(@2
$0 $' ?' $? #&' ?' 0# ?' '244'
2B5‹ " #$# ' * ' ? ' # ' G# ?'
$ '2((' 25E‹ * ? ' " #$# '
* ' ? ' +$ #$"' 2BB' '252‹ ? '
- ! & /' # 'G# ?' ?' " $ /' +$ '
#' $$ $'$'#B‹ ?' / &$# '235‹
& G'#' $ # ' ** /' 255‹ / L
&# /' FEE‹ $&D G /" /'? #' ' ?'
& G 'FE2‹ # ' 'FE4 FE4 FE(‹
? '+$ #$"'G# ?' /# $ /'FE(FE3'
FE5 F23‹ + $& /' G# ?#+- # +
FE)‹ ?' & #&$' # $# 'F22‹ ?'
- #'$'# '# G G# ?' /# $ /'F2B‹
- $'$-- $ $ &' *' F2)'‹ ?' - L
' -- /' ' ?' #' P $ $'
FFF‹ ?' #$ &' ' ?' &?0# ?-'
#' / ' FF@‹ ?' -$ >' *' "$# '
" ?' F44‹ ?$'$' # '# G G# ?'
6 >' 2\' $' " '#$' F4@‹ 0$ #' #'
? ' # ' ?' & G 'F(5‹ - &$#+ /'
, ' F@2‹ ?' J '$ /' &L
& '#' $# # '" $'$ +> ' -- ' =
-? ' #' "$' FBE‹ ? ' ?$ D L
"#'# '" * ' ?' '#& >' $' ' F)@‹
$D ' $& #' ' + $ ' * ' ?' / * &'
#' ?' G ' 0 / ' F32‹ ? '
&? + ' #' * +' F35‹ ' (‹
? '- &' #' +# /' $ /' -- #'
#' ?' + $' " '#$' F5B‹ ? '
'# #' ' '# ' F53‹ ?' J & # '#'
! #& ' F55' 4E2‹ / $' ' ' L
& &# ' ?' *$+## ' #' 8 K+$' $ /'
&' / ' 4EE‹ ? ' - " '
? "? /$ #$ # ' 2()3' 4EF‹ ? '
& / &' # ' ?' &$ ' #' '$ ' $ K'
/' " ' ‹ #' / #& 6 #, K'
425‹ ' ' 5(.'
+$D ' ? '& '$ >' *'# '$ /'
" '$+0# # ' 4(E‹ / &>' #'
? '$/+# # $# ' 4(2‹ $ ' #' ?'
P G '$'? '$&& # ' 4@@‹ # * & /'
0>' ?' 0#" >' #' ?' $" ' $ &/ '
4BE‹ &?$ $& ' #' ? '& * ' ▯ =
, +$/$' 4B2‹ #&# ' $ -$-$' 0 '
* ' ?' # / & # ' #' ?' , # # #
' $ # ' 4BF‹ ' ' +# / '
+ $ ' 4B4‹ * & ' ?' -$-$'
0 ' 4B(‹ ? ' '#" ' + $ ' # '
"$ /' ' ?' # " ' #' ?$+$' (@B‹

+ '$' *' ' " ' ##' ▯23‹ ? '
&$ ' #' - ' @B‹ ? '- ' $ & '
@)‹ ? '- #&>' G$ / '? ' 0 '@3‹
? '& >' ? ' "# ? /' &$ '
BF‹ '# # ' ? '&$+-' BB‹ ? ' >$'
& + ' * & ' ? ' $G ')5‹
&?$ # ' & $# ' && #$ #& ' 3E‹
'# # ' ? '&$+-' 0 * ' $$"$' 2EE‹
$0# ? '? ' #/ &'$'P$ ' 2F5‹
? ' & $" + ' #' ? ' -' 0 * '
K' 24@‹ ? ' & -# ' #' ? ' +L
0$ >' * +' ?' $ ' #' ">- ' 24)'‹
=? '& ++ #&$# ' G# ?' ?'$ +>'# L
- /' 2(F‹ "> $ /' -$ # #& $L
& #'#& * ' 2(4' '# # ' ?' &$+-' 2(@‹
? '- $# >' $ /'# * & ' 2@(‹ / L
- ?' ! /" ' #' &?$ & >' 2B@‹
$ #+$ ' ?' -' 0 * ' 8 $ $/$'
2B3‹ ' > ' ?' &# >' #8 $ $/$' 2B5‹
'/$ " '* +' ?'& *$" $# ' #' ?m
?# #$' &$+-' 2)2‹ ? ' *$' $0 '
/# - ## ' G$ / ' +0 ' F2F‹
$&D G /"+ ' / ' ' * ' $#/# '"
+0 ' F2)‹ *# $ >' & '
?'- &#-# ' #' ?'P G ' FF(‹ ? '
+# $D ' -# >' F45‹ $$ + /' $' ?'
$ +-'+$/' ' /# $ /▯' #' 'F(4'‹
? ' $ >' / &$ ' F)4‹ ? ' & &L
' #' 0 D ' F) (' F)@' ‹ ? ' L
#&# / '* ' ?'# &# ' #' ? '&?# L
/ ' F)@‹ #' ? ' # &' P ? '
F))'‹ #' ?' 0 ' F)3'‹ /# $# *# /'
G# ?' ?'- & /# "' - &# "' ?' &L
& # ' #' +$ ' ?'& G '(B4‹
? '$** #& # '$' ?' ' #' ? '/$ "?L
' (B('‹ / K$' J & ' ()F'‹
H#+ ' ? '& * '(32'‹ ? '$L
+- ' ' * +' ?' #"# ' $0L
?+ ' (34'‹ ** ' ?' ' #' L
/' Q# + ' (3)'‹ # ' /' 0>' ?'
" $' #' ?' $ &# &$ ' (5@‹ & L
' ?' * +' 0>' H#+ ' (5)‹
? '& *#/ &'# ' +0 '###'3 2@‹
/' 0$&D /#$ ' $' 23‹ / '
' ?'& +++# ' 0$/# $' 25‹
/ &$ ' ?' /#$ ' * 'F@'((‹ ?'
K $'* ' ?#'& ' # '(4‹ $ &# '
" ' $' >' ' ? ' 0 ' '
- - '# ' "$ /' ' ?' /#$ ' / L
* $ /'(@‹ $D ' -$ '# ' ?' $ #$ '
G$ ' 2E)‹ ? ' # =? $?' ' 2@F'
2@@' 2@5‹ ? ' - /#& # ' - & #'"
?$ ' :' 223‹ ? '# #' 'P $ $'
2@(‹ ? /# '2@@‹ 0 # '$ /'
* # / '2@F =2@@ F4)'‹ ? ' J # '
* ' -- # '" ?' &?# '$ # ' 2@B‹
/ &# ' *' ? ' ? $?' F4@'F(E' F(3‹
$# '? ' "# ' F43‹ $$ +' *' ?'
$ # 'F(E‹ -$ #& $ ' *' ? ' $L
+ 'F(2‹ '?' && # 'F(F‹

/# $ /' $+ /' & 0> ? # F(4 <
#? & /#&# F(@< ? $-- # + *
$& + +# # * ? & /#*#&$ # * ? $G # ? K $* ? & ' # *
? /#$ F(B< ? #" $? ?
& /#&# F()< ? #" $ # $ /) $?
F(3 FB2 < ? +$# $ - /
8 $ $/$ F(5< $#/ # ? ?$+L
0 $#*# < ? - *F@E< ? +$ L
F@2 < ? +$" $ #+# > F@4 <
? -# >F@(< ? 0#" >F@B F)2 <
? " ? * - # &#- F@5< ?
- $&/&$ FBE< G $ # / $& #L
'# > * FB2< ? & $" FB4< ?
#0# # > ? *$+# > $ / * # /
FB@< & + -$ / G# ? #K$0 ? * "L
$ / F B) # ' $? +$" ? ?
'# F)4 < *# &' * ? / $?
+0 4EB < ? $ + * ? ?
N ? &? @F2< ? &$ * ? + $ *
? ?& '> @FF
$0 $ /$ "? * /# $ / $ / $L
0 $ + $ * ? # G# ? ?
$ -?# * $ & # F4) < G# ?
-? ? * ? # & * "$
F3(< $&& + -$ # ? + ? ? ?
&$+ - # BB< $**#$ & /
? # * ? " + $ &?> 2@5
((4< & / "$ 2BE < ?
$ $&?+ ? ? ? 0$ /() + + L
> ((@ (() < ? # G# ? +$L
"$ (@@< ? - +$
/ $?(B(
$0 $ * $" # # $ / L
* $ ### 55
$ #$ +# # $ > $& #& # 4)2
$ > ? &? * - # #& $? &
? *#* ? & > # 4@2< ? ?
- G * $ 4@F < &?$ $& * ? ?
- # #& * 4@@ < # # $ - - #L
> 4@B< # #" * K$ # 4@)<
$ $ + / $? # '$ # * ?$
: 4B@< +# # > $& #& # 4) 2<
** & * ? G * ? $" *
: #& 43B < # * & * ? G$
? -$# (4) < # H (
/ #" ### @5 < - # #& * <
& , # BE< $ # ?+ * $
? -$ # # * $-)B< G$? ?
0 G ? &? $T -$ #$ /
54 <*$' ? -$ #$ / 5 (< &?#L
'$ &?$ $& * ? G$? ?
2EF< + $ &? > & /# # 2B5 <
'# G * ? $ * 2)F < $ J#
J- & $ # * / # ? 0$ * ? ?
8$ #" #$ 25E< # '$/ / 0> # ?
H (E4 < 0 / / 0> ? &?
(FE

P

P $ > ? &$ * ? ' # # *
8 $ $/$ ## 22

P G - & #' '# G *# -$# #
4(3 < & /# # * / ? $0
4(5 < / ? $ # #$ 4@2 < - L
& # *4@4 4@@ 4B@ < "# $ #'
$& + - & # "4@(< ? # $
$? $&& # * $0 $ 4@B<
&?$ " 0 "? $"$# ? + 4@) <
- * $/ +# / $"$# 4B@ < J&# L
+ $"$# ? + ## FF2 < & >
* + ? J&# + ,
** & " / $"$# FFF <
+$/$ '# & / & - & # "
FF4 < $0 $ * # " G$ / ? +
#0 < /#& * ? # J- # FF(F4B <
' - $ # FF@ < ? # & L
$ &> FF3 < ? # / -$ FF5 <
$ + * ? +# $ "$ <
? # ** # " # * #&$ F4E < #
$ > F42 < +# $ / $ / + *
$+ "# ? J# / F44 < G? +L
0 * J# / F4(< /# $ * *
? # J- # F4@< + #' * ? *
/#& F4B< & +- $ > ! /" +
? + G? F4) < 0$ # ? /
* + "$ (@@< - ?#0# / * +
" # "# ? G 7 / ### 4@
P $? +$ #$" G# ? P ? * $"
24B< ? / - + G$ / $
24) 2(4 < # 0 # " /$ $ 243 <
"# 0# ? /# $ / # $? #&
245< * 0# / / $ & $
2() < D * " # 8# $ 2@(<
0 # " Q $ $ / ! # # & L
/# $ / 0 * 8# $ 2BF < ? / $?
2B4
P $ $ $ " - # & # *
-? : +$ # / 6 > : *
$ # # 2)4 < ? "$ >A ? & L
-#&# ? + ?
*P $ $ & + + > &$ / Y ?
4 & 232< 0 /#' & / I FEE < ?
/ $? +$ D ? &?$ $& F@E &
P $ $!$ /$ "? * P $ $
G# * 6 > : * $ # #' 23F <
-- / 0> $ * $& # * ? >$
-$ > FE@ < $**#$ & / ? D *
8 # FFF < 8 # /# $ / ? ?
" #$ # $D - $& F44 < * /$
B * ? - - $ 0 # * * ? # "# #L
+$&> F(5 < ? - # ? ?
& G & #/ / F@E< -$ # $ * *
F@B < -- / 0> -? * L
"$ F@) < + $ # "$ / ? ?
+$ >* "? #+ F@5< ? ' # $D 0>
? ' F3(F3@ < ? - - / +$ #$" '
G# ? $ &# ? 0 ## 2) < * ?
+$ D - & # "? ((4 < ? / $?
(((< ? - - & # " /#L
$ /() # - / # G# ? ### F3@
P $ $ $$ "? * /# $ / $L
0 $ $ / + ? * ?$: ## 2) <

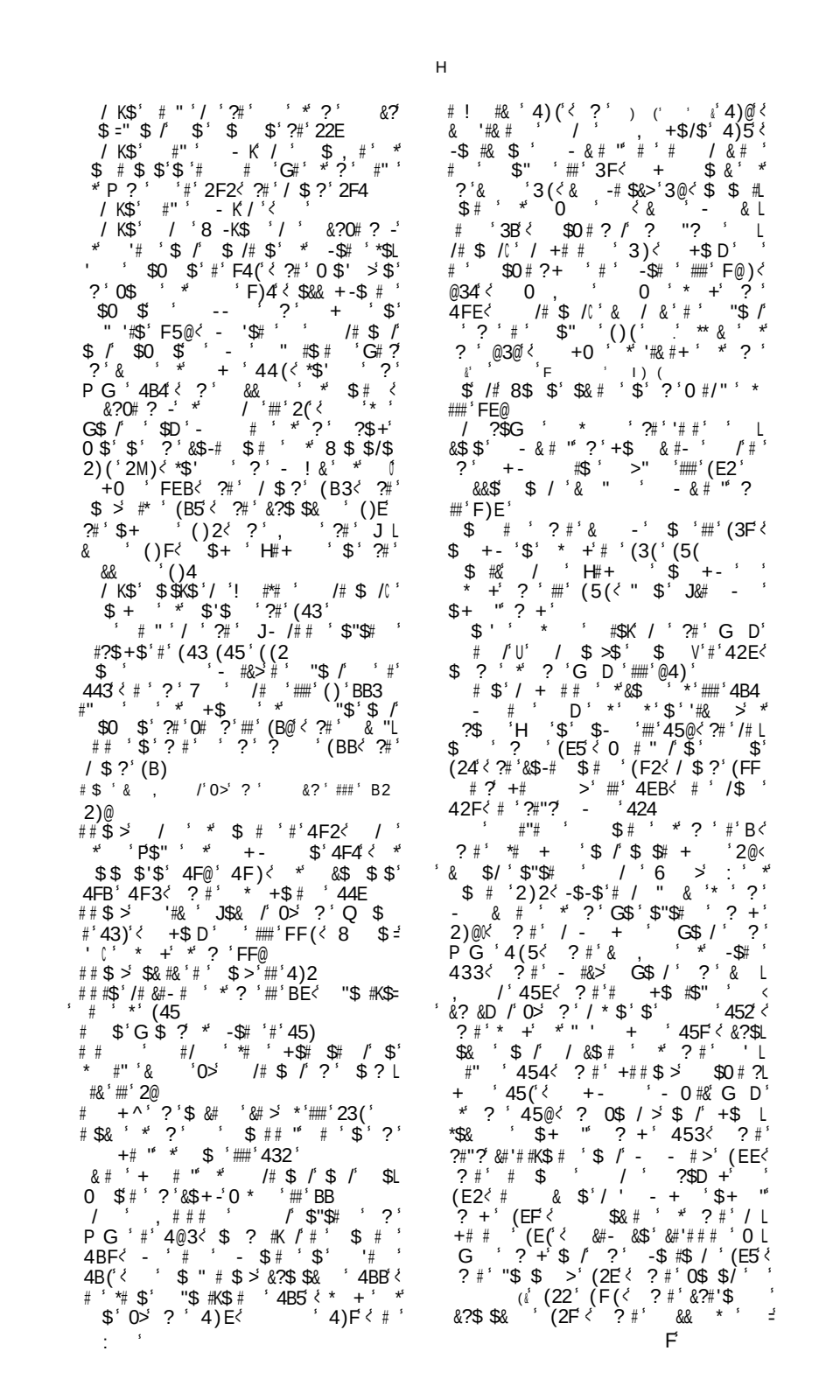
- - # # * ? +$ #$" * G# ?
$ &# ? 0 Q# '" $'$ <
? 0# ?((F <? +$ #$" # #
?*$+#> * #$ ((5 (@2 <? +0$ D$ # (@E <? $ #'$'# $
/ (@2< ?$: * *'### 223<
? / - / &> 2@F< 0# ? * ?
& / 2@4 < # $ 2@@ F4B<
'# # /0> $0 $ 2@(< ? +$/ & /
/ & F4) < ? # &$-$&# > F)) <*$
' ? " ' + 0> ? *$?
F32 < #" > & *# / ?& ?
& /# # $? / $? * ? ? 0$ /
44F < ? & / & # " $ / ? ?
? 0$ /(+$# 4(E< &?$ " ? ?
+# # 4(4< ? # '# G G# ?
/# $ / 4@) < ? / $?
'$ /
P ? 22 * $ # $&& # * #'2E3 <
0# D# "/ + " ' /0> *$' # $
2E5 < 0# -$ #$# > ' '$ / $
22E 222 < ?# -- # * ? & +
+ 22F< ?# & $" + * #
$ 22B< ?# +$ #$" G# ? ?
& $0 $ 2F5 < 0# / $?
244< ?# K $'$"$# ? #& 4()
P ? 22 * $" " ' $" /
"* ? $0 & * -? : #'
24@ < # * ?# $ $'$
&. ?# +$ #$" G# ? P $ 6 #
, K 24B< ? / - + G$ /
$ 24)< / * $ $ 243<
&& / ? & G * $" 2(F <
?# ?>- & # #&$ & &# #$ # G# ?
$ < ?# - *#/# $ +
$ /# #+- # + * ?#+ 2((< ?#
&$- * +' ?'* > * ? $ $ $ $
2(@< $?# $ 243
- # 2(B< ?# $ G# ? # H
* $ & 2@2< $ "#$ & L
& /0> ? $ $ $ 2@) < ?#
&& 2@3< ?# /# +0$ L
$ + $ /&$ $+# # 2BF < / $?
* ? G* * 2B4 < #+- ' + '
?# $*$# 2B(< $ # * ?# > L
#"? 2B@< 0 # " $ /0/ $ L
& $ 2BB< 0# +0$ $ + $'
? #+ * /# $ /($ & # '
$ # F24 < G # /# $ /
- & # "* ? &?0# ? - * / '
FF@< $D -$ G# ? Q # $ /
/$" $"$# # H FF3 <
? G ?#+ * # -#" $ FF5 <
?# $ #+$ # "* & / & F4E< # ' /
0> /# $ / < # / $# ?#'
$+0$ $/ F43< ?# '# '# G G# ?
/# $ / 0 , > ? ? 0$
* F32 < ?# / $? $ / &?$L
$& F3B
P ? D * $ $0 #$ $ / $# '
/ G# ? ? '" ' + * $ $L
#$ # 2BE< 0 / ? # " * *
8# $ 2B4< ?# - - $ # > $ / &L
& &. ?# / $? 2B@
P ? # & * -? L
"$ # F@) < +$ &? ? ? $# / *
?# *$? $ 9$+ $ FB3 < $D -$ '
? 0$ * 'F)2 F)F < & G L
/ F3E < #" ? & G ? #' *$'
? < - - # # * ? # * *
-? * *'G# ? $0 $ * $ L
F3(< /# & ' # # ? #" * *
25@ < +0 $- - # FE4 < ?# '
& / & G$ / ? J# / P G FF5 <
?# & - # * +0 ? #' L
* +' ?# *# ' >$" F())2 < L
/ $' ' &? &D ? &$ * -$ # ?
/# & ' > FBF< / $ $ +0$ $/ '
/# $ / $ / $0 $ FB(< ?# '
G$ > /#- +$&># $ "$ / ? # +L
0$ > ' ?# + FB@ < $/ '# / * +L
0 (?$ '# "* $# / ?# & / ' >L
$" FBB< ?# /# " FB) < $/! L
+ * * ? * +# / $ /# "' 0> ? '
$ > * / # $ FB3 < /# $ /
?' & G / ' ' * +$ ((@
P ? * /# $ / $ /' $0 $'
- - # # * ? # * G# ? $L
?$ # * $'$ ##' 23< + $ '
* ? ? & " # # * *' 2F4< ? * *
D #"? ? / & * / 2BF< ?# '
0# ? $ / $ > / &$ # F)) (((F '
)2 < ?# '$ $# + F)) < # & * (
? #$ ((F' T < # * G# ?
$ "$ (() (@F' (@4 < ?# // '
(@B< ?# / $? (@) < ?# '
$+#$0 &?$ $& (@3
P ? * $'$ < (F &
P ? $?# +# $& * ? $ /# "*
$#/ 0 - $ / $ $ ###'
432'
P /" $0 #/"+ * ? '& ++# # * *
? # 4E@' &
P " $ > 8 -$ / # , # # ' '
? /# & * $ $" $ ## 34
P # '?# 0 * *P > F3 ? 2@E3 ###'
(E< ?# & # $ - - 23E< $ #*# '
? $ > * $+0 $> (E@< ?# -L
- # # ? ? &?) (2E< " $ '
/# $ / ? ' # * $- '
$ / ? *$' (2F< 0 & + $
T -$ > # ? 6 > $" (24< ?# '
0 J& ++ #&$ # "* ? ' #" '
* $'$ (45
P # - / & * + * ? # 4E3 <
/> *' # -$# 42(2 Z "(
P #& $/+# # $ # *' # $ 0# # '
F(E' F35 F55 4E(42) ! D# "* $ /
, - #/ # & * 4E) <
+ $ * ? $/+# # $ # * *' ##'
2FB< $ # &# / - & # "'###'@(
P #& * $" # ?# & %< BF<

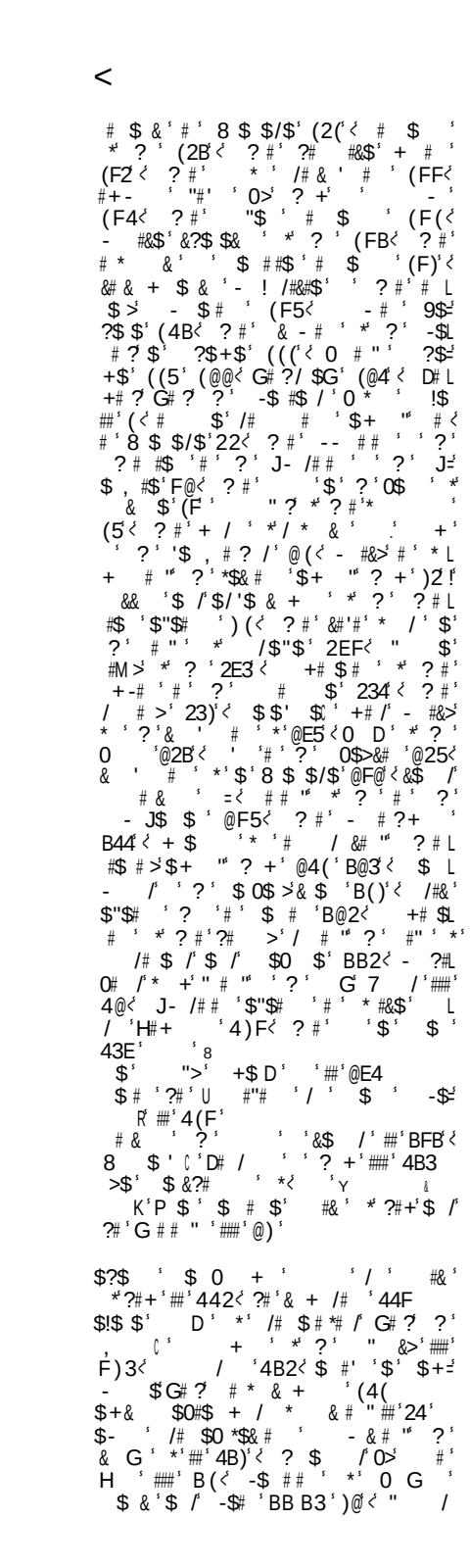
Q

?' -'$ /'# '$/ ' $>' (E3< ?#'$ $"" # ' ?' &? &?' (22< ?#' $> G# ? /# $ /' (4@ & $' 0$ ' *' ##' (E & $'$'# , # # ' ###' 4FE' " ' '$ K $ K / ' ! #&' J & L /' ' #' 4EF< $0 $ * ' ' -$ / ' ###' F@5' $' '$ ' / ' # ' $ /' &?$ $& ' * #' 2E5< $'*$' # ' *P ? ' ' *' $ L # ' 22E< '# G /' G# ?! $ >0> ?' 0 ' 222< 0# '# * &' # ' ?' -L - # ' *' ?' & + + ' 22F< ?' U' ? #& ((*' 2F)' < ?#' / &# ' ?# '# * & ' # ' $# ' ' #' +$ #$" ' *' P ? ' ' $ /' # ' & L , & ' 2F5< ?#' *$ ' ' < ?#' / $?' 24E< $+ /' 0> P ? ' 24F > ' ?' $> *' ###' 2F)' < ! & /' 0> /# $ /'2()< $> *'#'2@E(' > #& - >' G $ ' *' # ' $ # '##' 4F2

$&?#$' #' # ' +# # ' $' ?' -$-$' & ' ###' 25E $/ #/'0 & + ' ?' $' *" ' + ## ' 2(' ###' (33< $&& ' *' ?' L '# ' *' @@E' $" /# & ' > *' ?' - $ # > *' ? ## ' 25@' .#' 1 $? + $ # +' +$ D' ' #' 43B $ $"$' / & ' ?' '# ' *' ##' F2< / & #- # ' *' 54< J- /# # ' $"$'# ' 5 (< ?$ -' & ' 0 * ' 5)'< # ' /' 0> $$ /' $ /' 53< ?' 0 # #$ ' - & $& ' *' 55< ++ /' ' / ' 2E2 < /# ' # ' 2E@' 2E5< " $' $ > * +' 2E)' < L G D' &$ # / ' 2E5< - - $ '* ' L / # "' 222< / ' 224< $D ' - # ' *' 22(' 22@< - #*L &$ # ' *' 22(< $ ' *' ? # #$ ' &$- #' ' $ ' 22@< $+ ' *' ?' # L ?$0# $ ' *' 22)' < &' -$ /' ? + ' 223< G$ > / '#& ' *' /# $ /' - & # "' ?' - $ '* /' ? ' 225< & ' - #&> *' ?' '#& ' 2FE< + $L ' * ' - - # "' 2F2 $ #, ' P " ' ?# 'U' - $ V'##' 4FF< $ $ /' 0> "* G' ' $ $' $, #' *' $-- # /' & +L +$ / ' *' ?' &?' $ +>' ###' 23E< ?#' $ $&D ' &&$' &&$' 23(< 0 # / '$ 0 #/" ' $& ' ?' 8$ #" #$ ' $ /' -$ ' ' ' 23B< + ' ?#' , $ ' 235< # $ # ' *' ?' $ +> / ' 25@< ? #'# 0 /# $ # ' <

?# ' #" $ # ' 25B< && / /' 0> $ KK ' $ ' P $ ' $+0$ $/ ' $' ?' & ' *' $J#+# #$ ' ###' F)5< ?#' &?$ $& < ?# ' $ & / &> ' ' ?# #-' F5(' < $ '$ /' ? ' $'# ? /' ' 425< ?#' * #"?' ' ?' & ' *' $J#+# #$ ' 4B2 $ *$& '# ' -$# ' #' 453< $G' L - & # "' ###' @(B< J ' *' ?' *# ' @(3 $ & #- ' 8 D' * # ? /' ' H#+ =' 0> ?' - - ' ###' 45)< ? # ' '$ ' $ /' / & # ' (EE $ &? $' < ' $ "$ ' /$ "? ' *' $J#+# #$ ' ? ' # 'G# ? # & ' P ? ' ##' (( )' (@F' (@4< # &#/ ' # ' ?' $ > #* ' *' (@F' < ? ' ' -$# ' $ /' & -L # ' ? ' (@4 $ #$' /$ "? ' *' /# $ /' $ /' $L 0 $' ? '0# ?' ##' ((F' $ # $' #& ' *?# 'G D' # ' (3' $ # + ' &# ' $' +# ' &? $' # ' -$# ' ##' F32< #& ' *' ?# 'G # # " ' ' < &# /' - & # "' ? ' $/ +# # $L # ' *! #& ' ###' @F($ ' P + ' - 0 #& ?# # " $-? #' 2E4' $ > ' /("?# $' #& ' *' ?#+' $ /' ?# 'G D' ##' 2@@' <###' @B' ' <?# ' $ # ' ' +0 ' F2B' F@4< # L '# /' ' ?' & ' ' - ' $ &? ' * ' # ' > "' 0# # >' F3E< ?#' $0 ' F32< &# /' - & # "' $0 $' #&D= $ /' / $?' ###' F43' F45' F(5 $?#- '" $ /'$ J /' ' ?' & G #' 4F5 44E $J#+# #$ ' ?#' +0$ > ' /# $ /' $ /' $0 $' ##' 2FB< " #$ # ' *' ?' -$ # ?' & 'G# ?'###' B(< ?#' & ' G# ? ?' Q# "' *' $ & ' ' -$ #$' ' -$# ' 2)@< $+- 'G# ? 8 $ ' ' / ' / '$' F32 < ?$ ' ?' - # ' *' : #& 'G# # #' H ' (E@' 1 K , #'# ' &$- /' ###' 4)4< H#+ =' (' J- /# # ' $ #' '$ ' 4)B &? # ' $ > *' ###' (4B' ' & /# $& ++ &#$'#+- $ & ' *'###'@)F $' P ? ' / '$ /# # " # ? /' - '# ' A ? ' #" ' *' P ? ' ' #' 2F4< ?#' # L * & ' $ # #$ ' - >' 2F(/$ $' / ' / ' ?#' " # ' ' / '$ $L # '#' F5E / K$' # " ' 6 $/ ' / ' *$& ' L - & # "' 23B' T < $, #' *' $ # =' $ $' FFB< $// ' $ + $ & ' ?' D# "' $ /' , ' - & # "' ?' 7 (42)< ?#' +$" #'#& ' $# ##' B(< ?#' 0 $' >' B@< -- /' ' H#+ & '###' (5(





Castile, 279; increase of his party, 280; tampers with Gonsalvo, 281; lands at Coruna, and is joined by the nobles, 293; Martyr's account of his character, 295; avoids Ferdinand, *ib.*; his interviews with Ferdinand, 297. 303; his arbitrary government, 318; refers the affairs of the Inquisition to the royal council, 321; his death, 327; his character, 328; his remains moved to Granada, 340. 357, 358, *n.*

Philip II. claims the Portuguese crown, iii. 579, *n.*

Philip and Joanna, the accession of, iii. 276; embark for Spain, and arrive in England, 291; arrive at Coruna, 293; sovereignty of Castile surrendered to, 301; proceed to Valladolid, 317; style of living at the court of, 319.

Phœbus, Francis, the crown of Navarre devolves on, ii. 16; proposition for the union of, with Joanna, the daughter of Ferdinand and Isabella, 17; his sudden death, *ib.*; iii. 424.

Pinciano; see *Nunez*.

Pisa, France and Spain withdraw their protection from, iii. 408.

Pius III. elected pope, iii. 180; death, *ib.*

Plague, its ravages in Castile, i. 336; at Seville, 367.

Poetry, Castilian, i. 116; premium for, at Seville, 126; Hebrew, 351; Moorish, 424; ii. 306; subsequent Castilian, 306; developement of the Castilian, and further remarks, iii. 586, *n.*

Poison put upon arrows by Moors, ii. 53.

Polygamy, the cause of the revolution in Granada, ii. 11.

Polyglot Bible, Ximenes's edition of the, ii. 290, *n.* 292; iii. 386; account of it, 397; difficulties of the task, 399; scholars employed in its compilation, 399, *n.*; its merits, 401; destruction of the manuscripts which formed the basis of it, 401.

Pope, difference of the crown with the, i. 333; makes a grant to Ferdinand and Isabella, ii. 20. See *Alexander VI, Julius II, Leo X, Pius III,* and *Sixtus IV.*

Population, augmentation of, in Spain, iii. 576; census of, in Castile, *ib. n.*; mode of estimating it, *ib.*

Portugal, treaty of peace between Castile and, i. 283; application of Columbus to the King of, ii. 203; treatment of the Jews in, 229. 237, *n.*; Jews banished from, *ib.*; King and Queen of, visit Spain, 460; Philip II.'s claim to crown of, iii. 579, *n.* See *Alphonso.*

Portuguese, maritime enterprise of the, ii. 195; jealous of the Spanish maritime enterprise, 262.

Pragmáticas, issued, i. 112; iii. 521; frequency of, in the reign of Ferdinand and Isabella, 527, *n.*; collected and published, 535.

Press, censorship of, established, ii. 297.

Priego; see *Cordova, Pedro de.*

Printing, introduction of, into Spain, ii. 294; the queen encourages it, *ib.*; its rapid diffusion, 295; frequency of presses for, iii. 574.

Provençale literature, revives in Aragon, i. 97; flourishes in Valencia, 101; writers there, *ib.*; abandoned, 102.

Pulci, the Florentine poet, cited respecting land in the West, ii. 201.

Pulgar, Fernando del, his account of the Swiss mercenaries, ii. 61 remarks respecting him, 75, *n.*

Purgatory, exemption from, by papal bulls, i. 175, *n.*

Q.

Quincuagenas, account of this curious manuscript, i. 220, *n.*

Quintanilla, his life of Ximenes, ii. 501.

R.

Rank, not a passport to honour, i. 312.

Ravenna, battle of, iii. 414; its effects, 419.

Ravenstein, iii. 78; shipwrecked, 83.

Redondilla, remark on the, ii. 310, *n.*

Reduan Benegas, ii. 26. 34.

Reform, of the monasteries, ii. 484; in the diocese of Ximenes, 492; of the monastic orders, 493; great excitement caused by it, 494; visit of the Franciscan general, who insults the queen, 495; the pope's interference, and the queen's consent to a reform, 497; its operation and effects, 498.

René le Bon, of Anjou, crown of Catalonia offered to, i. 160.

Repartimientos, the system of, iii. 563.

Revenues derived from the West Indies, iii. 559. 572; augmentation of the, 574.

Richelieu, Cardinal, his declaration on his death-bed, ii. 496; parallel between him and Ximenes, 510.

Riol, Santiago Agustin, on the various tribunals under Ferdinand and Isabella, iii. 539, *n.*

Rivers, Earl of, from Britain; see *Scales.*

Robertson, William, i. 56, *n.*; on the genuineness of Isabella's testament, iii. 279, *n.*; on Ferdinand's intention to oppose Philip's landing, 283, *n.*; on Ferdinand's proposed union with Joanna Beltraneja, 285, *n.*; on the queen's exaction of an oath from Ferdinand that he would not marry a second time, 293, *n.*; his bias respecting Ferdinand's transactions with Philip, 304, *n.*; on Ximenes's objection to slavery, 491, *n.*

Roderic, King of the Goths, fatal battle of, i. 389.
Roger, Ponce, a reconciled heretic, his punishment, i. 347, *n.*
Roman Catholic; see *Church*.
Romances of chivalry, ii. 301; their evil effects, 304.
Rome, perfidious policy of, in regard to dispensations, i. 382; see *Church* and *Pope*.
Ronda, prisoners taken at, liberated, ii. 70; Hamet Zeli, the defender of, 94; rendezvous at, 537. 545.
Roussillon, pledged to the French king, i. 156; revolt there, 228; second French invasion of, 238; siege and reduction of, 241; perfidy of Louis XI, 242; negotiations respecting, ii. 361; restored to Aragon, 364; invaded by the French, iii. 158.
Ruvo, captured, iii. 113; the important consequences, 116.

S.

St. Angel, Louis de, intercedes with Isabella for Columbus, ii. 211.
St. Dominic, remarks on, i. 345, *n.*; act of, for a penitent heretic, 347, *n.*
St. George, the storming of, iii. 72.
St. James, grand master of, i. 222; military order of, 323; see *Villena* and *Cardenas*.
Salamanca, literary character of, ii. 291; the concord of, iii. 290. 294; university of, 402. 574.
Salsas, siege of, iii. 158.
Saluzzo, Marquis of, sent to the relief of Gaeta, iii. 176. 181; succeeds the Marquis of Mantua as commander of the French army in Italy, 196; his retreat to Gaeta, 204; routed, 208; fate of the army under, 214; his death, 215.
San Germano, Gonsalvo takes post at, iii. 183.
Santa Fe, history of the origin of, ii. 173.
Santa Hermandad, re-organization of the, i. 290. See *Hermandad*.
Santillana, Inigo Lopez de Mendoza, Marquis of, an illustrious wit of the reign of John II, i. 121; his death, 123, *n.*; 186, *n.*; cited, 131, *n.*
Saracen invasion of Spain, i. 1. 9.
Saragossa, *Autos da fe* celebrated at, ii. 84; visited by the sovereigns, 123.
Savona, brilliant interview of Ferdinand and Louis XII. at, iii. 352.
Scales, Lord, aids the Spanish sovereigns, ii. 62; the queen's courtesy to, 63; his costume at the meeting of Ferdinand and Isabella before Moclin, 67; loses his life, 127, *n.*
Scott, Sir Walter, his representation of René's character, i. 100, *n.*; of Rebecca and Isaac, 353, *n.*
Sculptors in Spain, iii. 574, *n.*
Segovia, interview there, between Henry IV. and Isabella, i. 235; Isabella proclaimed queen there, 251; tumult at, suppressed by Isabella, 295.
Seminara, the march against, ii. 402; battle of, 405.
Sempere, critical notice of, i. 57.
Seville, the corporation of, offer premiums for poetry, i. 126; reception of Isabella there, 298; Inquisition at, 364; prevalence of the plague at, 367; reception of Columbus at, ii. 250; colonial trade confined to, iii. 42; heretics burned there, 585, *n.* See *Mendoza*.
Sforza, Lodovico, intrigues of, ii. 357; his proposal to the King of France, *ib.*; jealous of the French, 376. 383; unpopularity of, iii. 59; his fate, 61.
Sheep, in Castile, i. 30, *n.*
Sidonia, Medina, the Duke of, head of the Guzmans, i. 227; a supporter of Isabella, 300; marches to relieve Alhama, 452; to Malaga, ii. 106; death of, 188, *n.*; application made to, by Columbus, 207; his income, iii. 519, *n.*
Sierra Vermeja, revolt of the, ii. 535; expedition into the, 537; Spaniards routed there, 544; submission of, 546; fate of the inhabitants of, *ib.*; ballads thereon, 547; melancholy reminiscences respecting, 549.
Silva, Alonso de, sent by Ferdinand to the French court, ii. 368; Charles's dissatisfaction with him, 370; opens a correspondence with Sforza, 376.
Silva, Juan de, Count of Cifuentes, his connexion with the expedition to Axarquia, ii. 22.
Silveira, Fernando de, representative of the Prince of Portugal at the affiancing with the Infanta Isabella, ii. 159.
Sismondi, remarks on his writings, ii. 426, *n.*
Sixtus IV, the sovereigns of Castile differ with, i. 332; sends a legate to the court of Castile, 334; grants a bull, authorizing the Inquisition in Castile, 362; his conduct, 368; his present of a cross to the sovereigns, ii. 69.
Slaves, condition of the Visigothic, i. 4; regular exchange of, recommended by Columbus, iii. 16; Isabella's proceedings in regard to, 17. 43; sent back, 18; introduction of, into the New World, 44; in the colonies, 564.
Slidell, his remarks on the armour of Ferdinand and Isabella, ii. 68, *n.*; his description of Toledo, iii. 572, *n.*
Solis, invited to court, iii. 559; his discoveries, 562.
Sos, in Aragon, the birth-place of Ferdinand the Catholic, i. 139.

Soto, Ferdinand de, his discoveries and death, iii. 559, *n.*
Sotomayor, Alonso de, his duel with Bayard, iii. 104.
Sousa first gains the summit of the walls of Oran, iii. 380.
South Sea, effect of its discovery, iii. 562.
Spain, i. 1; consolidation of the various states of, 2; number of states in, reduced to four, *ib.*; influence of the Visigoths on, 4; of the Saracen invasion on, 5; of the ecclesiastics there, 11; state of the Jews in, at the accession of Isabella, 356; early successes of Mahometanism and the Arabs in, 386; conquest of, 388; treatment of Christians in, 390; mineral wealth of, 397; civilities between the people of, and the Spanish Arabs, 409; merits of the scholars of, ii. 289; universities of, 291; introduction of printing into, 294; encouraged by the queen, 295; its rapid diffusion, 297; importance of the treaty of Barcelona to, 363; alarmed at the expedition of Charles VIII. into Italy, 362; peace of, with France, 434; influence of the Italian wars on, 437; moral consequences of her discoveries in the West, iii. 51; her geographical extent, 53; neutrality of, secured in relation to France and Italy, 60; alarmed by the French conquests in Italy, 61; rupture of, with France, 90; invasion of, by Louis XII, 157; effects of the reign of Ferdinand and Isabella on, 514; policy of the crown at their accession, 515; depression of the nobles in, 516; treatment of the church in, 521; morals there, 522; state of the commons in, 523; royal ordinances for, 527; advancement of prerogative in, 533; legal compilations there, 536; organization of councils in, 538; legal profession in, advanced, 540; character of the laws during the reign of Ferdinand and Isabella, 544; erroneous principles of legislation in, 545; principal exports from, 547; manufactures, 548; agriculture, 549; economical policy in, 552; internal improvements in, 554; increase of the empire of, 556; its government of Naples, 557; its revenues from the Indies, 559; spirit of adventure in, 560; progress of discovery, 561; effect produced there, by the discovery of the South Sea, 562; slavery in her colonies, 564; administration of laws in the colonies of, 567; its general prosperity, 569; opulence of the towns of, 571; public embellishments in, 571; augmentation of its revenue, 572; of its population, 576; patriotic principle in, 579; spirit of bigotry in, 583; beneficent impulse there, 584; the period of national glory for, 588. See *Castile.*
Spaniards, their gradual encroachment on the Saracens, i. 9; dissensions among them, 10; extend their conquests to the Douro and Tagus, 11; their religious fervour and fanaticism, 12; their traditional minstrelsy, 13; their respect for the Mahometans, 15; early discoveries by the, ii. 196; their progress of discovery, iii. 563; excesses, 564; their patriotic principle, 579. See *Castile.*
Spanish Arabs; see *Moors.*
Spanish fleet, fitted out under Gonsalvo de Cordova, iii. 67.
Stage, low condition of the, ii. 336.
Sugar-cane introduced into Hispaniola from the Canaries, iii. 559.
Swiss mercenaries, Pulgar's account of the, ii. 61; employment of, 186; their value in the expedition of Charles VIII, 373; their organization, 374.

T.

Talavera, Fray Fernando de, anecdote respecting him and Isabella, i. 360; regards Columbus's theory as visionary, ii. 205; opposes the demands of Columbus, 211; Archbishop of Granada, 506; remarks respecting, 507. 508; his mild policy, 509; the clergy dissatisfied with it, 510; appeases the insurgents of the Albaycin, 521; commends Ximenes, 527; the queen's correspondence with, iii. 256, *n.*; a victim of the Inquisition, 257, *n.*
Tarento, invested by Gonsalvo de Cordova, iii. 82; surrenders, 87.
Tendilla, Inigo Lopez de Mendoza, Count of, remarks respecting, ii. 506; his conduct at the Albaycin, 520; his income, iii. 520, *n.*
Ticknor, George, his essay on the early progress of the dramatic and the histrionic art in Spain, ii. 341, *n.*
Time, economy of, by Ximenes, iii. 508.
Toledo, account of environs of, iii. 550, *n.*
Toledo, wealth and grandeur of the archbishop of, i. 44; iii. 521, *n.* See *Carillo, Mendoza,* and *Ximenes.*
Toledo, Fadrique de; see *Alva.*
Toledo, Garcia de, loses his life, iii. 388, *n.*
Toleration, among the Moors, i. 6; remarks on the want of, ii. 554. See *Intolerance.*
Tordesillas, treaty of, ii. 268.

Toro, battle of, i. 271; meeting of the assembly at, in 1505, iii. 276.
Toro, Leyes de, iii. 536.
Torquemada, Thomas de, the confessor of Isabella, facts respecting, i. 361; Inquisitor-general of Castile and Aragon, 369; convictions under, 379; his last days and death, 382; his fanaticism, 383; his violent conduct at a Jewish negotiation with Ferdinand and Isabella, ii. 223; forbids the Jews receiving assistance, 229.
Torture by the Inquisition, i. 372.
Tournament near Trani, iii. 102.
Trade, regulations of, i. 335, iii. 541.
Trani, tournament near, iii. 102.
Trastamara, revolution of, i. 107; termination of male line of the house of, 245.
Tribunals of Castile, reorganization of the, i. 306.
Tripoli captured, iii. 388.
Truxillo, punishment of certain ecclesiastics there, ii. 80.
Turks, Frederic's application to, for aid, iii. 65; Gonsalvo's expedition against, 72; their defence of St. George, 73.

U.

Universities, Spanish, ii. 291; iii. 390. 402. 574.
Urena, Count of, ii. 538; his conduct at the Sierra Vermeja, 540, 541. 544; goes out to meet Gonsalvo, iii. 365; comes into collision with Ximenes, 494.

V.

Valadata, intellectual character of, i. 403, *n.*
Valencia, conquered by Aragon, i. 59; loans by the city of, ii. 143; printing press at, in 1474, 296.
Vega, Garcilasso de la, rescues Ferdinand, ii. 92; notice of, 96, *n.*; minister of Ferdinand, 376; aids Gonsalvo at the storming of Ostia, 430; his boldness towards the pope, iii. 63; Ferdinand's deportment towards him, 298, 346.
Vega, Lorenzo Suarez de la, his negotiations, iii. 63; his ability, 173, *n.*
Velasco, Bernardino de, grand constable, iii. 364; proposed union of, with Elvira, 366; facts respecting, *ib. n.*; his income, 519, *n.*
Velez Malaga, position of, ii. 89; its surrender, 92.
Velilla, prophetic tintinnabulations of the miraculous bell of, iii. 461, *n.*
Venereal disease, origin of the, iii. 49.
Venice, the celebrated league of, ii. 384; aids France against Milan, iii. 59; Ferdinand's negotiations with, 63; her distrust of France, 173; projects against, 405; partition of, by the treaty of Cambray, *ib.*; power of, broken by the battle of Agnadel, 409; continental provinces of, released from their allegiance, *ib.*; becomes a party in the Holy League, 412; disgusted, 420; her definitive treaty with France for their mutual defence, 421; laid waste by Cardona, *ib.*; Daru's history of, 423, *n.*
Vergara, Juan de, employed in the compilation of Complutensian Polyglot, iii. 399, *n.*; epitaph on Ximenes, 501, *n.*
Vespucci, Amerigo, iii. 29, *n.*; gives the name to the western continent, iii. 560.
Viana, Prince of. See *Carlos.*
Vicenza, cruelties at capture of, iii. 418, *n.*
Villafrata, destroyed by Ximenes, iii. 494.
Villena, Henry, marquis of, his literary character, i. 118; fate of his library, 120, 381, *n.*
Villena, Juan Pacheco, marquis of, character and influence of, i. 177; disgraced, 180; his league with the archbishop of Toledo against the crown, 181; assists in deposing Henry IV, 184; his intrigues to prevent a reconciliation of parties, 187; supports Joanna Beltraneja, 206, 276; threatens Isabella with imprisonment, 207; his endeavours to prevent the union of Ferdinand and Isabella, 211; appointed grand master of St. James, 222; his avarice, 224, *n.*; incenses Henry IV. against Isabella, 236; his death, 243; dissatisfied with the settlement of the queen's regency, iii. 278; favours Ferdinand, 346; his income, 519, *n.*
Visigoths, overrun Spain, i. 4; character of their laws, 5; Spain taken from them, 6; condition of slaves among them, 8.

W.

War of the Succession, i. 256.
Weights and measures, laws respecting, iii. 555.
West, belief of land in the, ii. 200.
West Indies, discovery of the, ii. 247; why so called, 254; regulations of trade with, 255; preparations for a second voyage to, 258. See *Colonies, Hispaniola,* and *Indies.*
Wool, in Spain, iii. 547.

X.

Ximenes, Cardinal, his famous Polyglot Bible, ii. 290, *n.*; his birth, 474; visits Rome, 475; his return and imprisonment, 476; established at Siguenza, 477; enters the Franciscan order, *ib.*; his severe penance, 478; his ascetic life, 479; made guardian of Salzeda, 480; introduced to the queen,

and made her confessor, 481; elected provincial, 482; his attempts at reform, 483; the see of Toledo offered to him, 487; he reluctantly accepts, 488; anecdotes of, 489; his austere life, 491; reform in his diocese, 492; example of his severity, 493; authorities on whom his life mainly rests, 500, *n.*; his moral energy, 505; goes to Granada, 511; his violent measures for converting the Moors, 512; destroys Arabic books, 516; besieged in his palace, 520; his communications to the sovereigns respecting the revolt of the Albaycin, 524; hastens to court, *ib.*; general approbation of his measures, 527; his rebuke of Vianelli, iii. 239, *n.*; sustained by the queen, 253; remonstrates with Philip on the recklessness of his measures, 319; his influence, 329; his conduct upon the death of Philip, 330, 346, *n.*; honours conferred; his enthusiasm, 372; his designs against Oran, 373; his warlike preparations, 374; his perseverance, 375; sends an army to Africa, 376; addresses the troops, 377; relinquishes the command to Navarro, *ib.*; his entry into Oran, 381; opposition to him, by Navarro, 383; his distrust of Ferdinand, 384; gives counsel to Navarro, and returns to Spain, 385; refuses public honours, *ib.*; his return to Alcalá, 386; his general deportment, *ib.*; visits the families of his diocese, *ib.*; busily occupied with his university at Alcalá, 390; said to continue to watch over Oran after his death, *ib. n.*; his reception of Ferdinand at the university of Alcalá, 395; account of his Polyglot Bible, 397; difficulties of the task, 399; persons employed about it, *ib. n.*; his gratitude on its completion, 400; his projected edition of Aristotle, *ib. n.*; grand projects of, 402; his bequest to the university at Alcalá, *ib.*; the administration of Castile left to, 465, 466; meets with opposition respecting the regency, 486; opposes the desire of Charles to be proclaimed king, 487; replies to the Castilian aristocracy, 488; his military ordinance, 489; his domestic policy, 490; his foreign policy, 494; sends a commission to Hispaniola, to ameliorate the condition of the natives, *ib.* 567; extends the Inquisition, 491; assumes the sole power, 493; intimidates the nobles, 494; burns Villafrata, *ib.*; public discontents under, 495; his reception of Charles, 497; Charles's ungrateful letter to, 498; his last illness, 499; his death, 500; celebration of his obsequies, *ib.*; Vergara's epitaph on, 501, *n.*; his character, *ib.*; his versatility of talent, *ib.*; his bigotry, 502; his despotic government, 503; his moral principle, 504; his disinterestedness, 505; his self-confidence, *ib.*; his chastity, 506; his monastic austerity, 507; anecdote in relation to his dress, *ib.*; Quintanilla cited respecting, *ib. n.*; his economy of time, 508; description of his person, 509; examination of his skull, *ib. n.*; parallel between him and Richelieu, 510.

Z.

Zagal. See *Abdallah.*

Zahara surprised by the Moors, i. 436.

Zamora, Alfonso, employed in the compilation of the Complutensian Polyglot, iii. 399.

Zamora, defection of, i. 262; Ferdinand passes to, 267; King of Portugal arrives before, 268; surrender of, 277.

Zegri, a Moor, his conversion, ii. 515.

Zeli, Hamet, the defender of Ronda, intrusted with the command of Gebalfaro, ii. 94; his remark after his surrender, 116.

Zenete, Abrahen, a noble Moor, generosity of, ii. 109.

Zoraya, the sultana, jealous of the sultan Abul Hacen, ii. 11; her success, 12 her embassy to Cordova for the redemption of Abdallah, 44; her reproof o Abdallah for his weakness, 180.

Zuniga, Lopez de, employed in the compilation of the Complutensian Polyglot iii. 399, *n.*

Zurita, Gerónimo, his life and writings ii. 387.

THE END.

London: Printed by Samuel Bentley, Dorset Street, Fleet Street.

□□□

Digitized with financial assistance from

on 15 October, 2018